

BIOLOGICAL ASSESSMENT
FOR
FEDERALLY LISTED PLANT AND ANIMAL SPECIES

SUNNY SOUTH INSECT TREATMENT PROJECT

AMERICAN RIVER RANGER DISTRICT
TAHOE NATIONAL FOREST

JUNE 20, 2016

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Table of Contents

I.	EXECUTIVE SUMMARY	3
II.	INTRODUCTION	8
III.	CONSULTATION TO DATE.....	8
IV.	CURRENT MANAGEMENT DIRECTION.....	8
V.	DESCRIPTION OF THE PROPOSED ACTION.....	9
VI.	EXISTING ENVIRONMENT, EFFECTS OF THE PROPOSED ACTION AND DETERMINATIONS.....	13
	<i>California Red-legged Frog (Rana draytonii)</i>	15
	<i>Layne's butterweed (Packera laynae)</i>	33
VII.	LITERATURE CITED AND REFERENCES	39
	APPENDIX A. USFWS SPECIES LIST	42
	OFFICIAL SPECIES LIST.....	45
	PROJECT NAME: SUNNY SOUTH	45
	ENDANGERED SPECIES ACT SPECIES LIST	47
	CRITICAL HABITATS THAT LIE WITHIN YOUR PROJECT AREA	48
	APPENDIX B. CALIFORNIA RED-LEGGED FROG HABITAT SITE ASSESSMENT DATA SHEETS	50

I. EXECUTIVE SUMMARY

DATE: June 28, 2016

PROJECT NAME: Sunny South Insect Treatment Project

SCOPE OF AREA AFFECTED: The project is located on the American River Ranger District, Tahoe National Forest, near Sugar Pine Reservoir, Big Oak Flat, and the Foresthill Forest Genetics Center in Placer County, California (Figure 1). The total project area is approximately 2,800 acres. The elevation ranges of the Sunny South treatment units are 3,464 to 4,419 feet above mean sea level.

BRIEF DESCRIPTION OF PROJECT: The Tahoe National Forest, American River Ranger District proposed the Sunny South Insect Treatment Project (hereafter Sunny South Project) to accomplish the following: 1) Reduce the risk or extent of, or increase resilience to, insect infestation; 2) Reduce wildfire risk to the local communities and surrounding federal lands associated with insect infestation-caused tree mortality; and 3) Improve forest heterogeneity in mortality-created openings with a mixture of trees more resistant to bark beetle outbreaks.

PROJECT ANALYSIS: Effects analyses areas are species-specific, as described below, and extend 20 years before and after the present, in correlation with the estimated longevity of vegetation treatments. The findings of this Biological Assessment (BA) for the Sunny South Project are summarized below in Table 1.

Table 1. Executive summary of recommendations and findings for the Sunny South Project

SPECIES	SPECIES STATUS ¹	SPECIES OR HABITAT PRESENT	MANAGEMENT REQUIREMENTS	EFFECTS DETERMINATION ²	RECOMMENDED MITIGATION FOR NO EFFECT
PLANT SPECIES					
Layne's butterweed (<i>Packera layneae</i>)	T	Yes	Yes	May Affect	N/A
ANIMAL SPECIES					
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	T	No	None	No Effect	N/A
Delta smelt (<i>Hypomesus transpacificus</i>)	T	No	None	No Effect	N/A
Lahontan cutthroat trout (<i>Oncorhynchus clarki henshawi</i>)	T	No	None	No Effect	N/A
Central Valley steelhead (<i>Oncorhynchus mykiss</i>)	T	No	None	No Effect	N/A
Central Valley spring-run chinook salmon (<i>Oncorhynchus tshawytscha</i>)	T	No	None	No Effect	N/A
Winter-run chinook salmon, Sacramento River (<i>Oncorhynchus tshawytscha</i>)	E	No	None	No Effect	N/A
California red-legged frog (<i>Rana draytonii</i>)	T	Yes ³	Yes	Species: MANL Critical Habitat: No Effect	N/A
Sierra Nevada yellow-legged frog (<i>Rana sierrae</i>)	E	No	None	No Effect	N/A

¹ U.S. Fish and Wildlife Service (USFWS) Endangered (E), or Threatened (T) species

² Effects determinations are shown for the Proposed Action. Determinations of "May affect but is not likely to adversely affect" are shown as MANL. Determination of Adversely Affect is shown as AA.

³ Habitat (only) present in analysis area. A known population and critical habitat for California red-legged frog are located approximately 2 miles or more south of the project area.

MANAGEMENT REQUIREMENTS (numbering matches Decision Memo):

2. Protect Botanical Resources

- a. Survey all TES botanical species suitable habitat prior to project operations. Surveys must occur in season when species are identifiable and must be conducted within the five years prior to project implementation.

- b. Flag and avoid all Threatened, Endangered and Forest Service Sensitive (TES) botanical occurrences for all ground-disturbing activities (e.g. temp road construction, skid-steer thinning, mastication, and prescriptive fireline construction). Some occurrences may require an additional avoidance buffer to be determined by district botanist based on survey results.
- c. Fell trees away from all TES botanical occurrences.
- d. Do not underburn or place burn piles in TES botanical occurrences for those species that are disturbance intolerant. Construct fireline at least 100 ft. away from these occurrences. Conduct adjacent underburn operations when TES botanical species are dormant.
- e. Flag and avoid watch list botanical occurrences for all ground-disturbance activities for those species that are disturbance-intolerant. Some occurrences may require an additional avoidance buffer to be determined by district botanist based on survey results.
- f. Flag and avoid all bogs and fens with a 300-foot buffer area. Buffer may be reduced if proposed activities do not threaten to degrade the hydrologic processes that sustain water flow, water quality, water temperature, and hydrological connectivity.

10. Reduce Risk of Non-Native Invasive Plants (NNIP) Spread

- a. Use standard timber sale contract provision WO-CT 6.36 to ensure appropriate equipment cleaning. Clean equipment after working in areas with known infestations, and prior to bringing equipment onto the forest. Clean all equipment that operates off roads before it enters the project area if it is coming from areas infested with nonnative invasive plants.
- b. Clean equipment that is operating off roads before it moves from an infested area within the project to another area (within or outside the project area).
- c. Ensure that all plant material used for erosion control and/or road maintenance is NNIP free (including straw and mulches as well as propagative parts such as seed).
- d. Survey all units prior to project operations. If NNIP infestations are found, avoid soil disturbance in infested areas by buffering them by 50 feet until a determination has been made that the infestation is eradicated.
- e. Locate and use weed-free project staging areas and landings. [USDA Forest Service 2001, practice 4]
- f. All imported materials (e.g. erosion control materials, soil, gravel, etc.) will be from a certified weed-free source or inspected for NNIP prior to use. [USDA Forest Service 2001, Practice 16, reworded]
- g. Monitor and treat all limited term ground-disturbing operations in infested areas for at least three (3) growing seasons following completion of the project. For on-going projects, continue to monitor until reasonable certainty is obtained that no new infestations have occurred. Provide for follow-up treatments based on inspection results. [USDA Forest Service 2001, Practice 18]
- h. Throughout the implementation period of the proposed action, the Forest Service should maintain flexibility to defer cut units or stands within priority areas from treatment due to the discovery of new NNIP infestations with potential to disrupt the functioning of native plant communities. Aggressively treat these infestations with the appropriate management tool, as deemed necessary by invasive plant program personnel.
- i. When use of landings and staging areas is completed, reestablish native vegetation through planting native seeds to minimize weed establishment and infestation on landings and staging areas within 100 feet of infestations.

43. Riparian Conservation Areas

- a. Establish Riparian Conservation Areas (RCAs) for all aquatic features, as specified below. Ensure Riparian Conservation Objectives (RCOs) are met within RCAs by adhering to the Project Riparian Conservation Area (RCA) Guidelines. These guidelines specify the types of activities that can be conducted within RCAs and mitigation measures to minimize impacts to aquatic feature and riparian ecosystems. RCA widths are shown in Table 2.

Table 2. RCA Widths

Stream Type	Width of the Riparian Conservation Area
Perennial Streams	300 feet each side, measured from bank-full edge
Seasonal Flowing Streams	150 feet each side, measured from bank-full edge
Streams In Inner Gorge	Top of inner gorge
Meadows, lakes, and springs	300 feet from edge of feature or riparian vegetation, whichever is greater

- b. Establish a 100-foot “riparian buffer” zone along each side of perennial streams and special aquatic features, 50-foot “riparian buffer” along each side of intermittent streams and establish a 25-foot “riparian buffer” zone along each side of ephemeral streams. No harvest or ground based equipment is allowed in riparian buffers unless agreed to by a riparian specialist.
- c. Limit ground-based equipment to slopes less than 20% within all RCAs. To reduce ground disturbance created by equipment within RCAs, vary the routes the equipment uses and minimize turning of equipment.
- d. Within RCAs having slopes less than 20%, and outside of the riparian buffer, rubber-tired skidders or low ground pressure equipment may enter to retrieve logs but are limited to 1 to 2 passes over the same piece of ground. Note: Document on harvest cards if entering RCAs with high-ground-pressure equipment to retrieve logs.
- e. No new landings or roads will be located within RCAs. Consult with a riparian specialist before using an existing skid trail, landing, or road located within an RCA.
- f. Designated skid trails crossing ephemeral stream channels may be approved for access to otherwise inaccessible areas, but only upon consultation with a riparian specialist.
- g. Place rock on roads at stream crossings and segments within identified RCAs to reduce the impact of sediment delivery to associated stream courses. Place rock, slash, or certified NNIP free mulch at the outlets of rolling dips and/or waterbars to dissipate water where identified by road engineer and soil scientist, and/or hydrologist.

44. Water Source Use

- a. Armor road approaches as necessary from the end of the approach nearest a stream for a minimum of 50 feet, or to the nearest drainage structure.
- b. Where overflow runoff from water trucks or storage tanks may enter the stream, effective erosion control devices shall be installed.
- c. All water-drafting vehicles shall be checked daily and shall be repaired as necessary to prevent leaks of petroleum products from entering RCAs or water.
- d. The operators of water-drafting vehicles shall have petroleum spill kits and know how to effectively deploy the hazardous response materials/spill kits. Dispose of absorbent pads according to the Hazardous Response Plan.
- e. Survey all proposed drafting locations for sensitive and listed amphibians and receive approval from a biologist prior to use. Use drafting devices with 2-mm or less screening and place hose intake into bucket in the deepest part of the pool. Use a low velocity water pump and do not pump ponds to low levels beyond which they cannot recover quickly (approximately one hour). If a sensitive or listed amphibian is sighted within the project area, cease operations in the sighting area, and inform a Forest Service aquatic biologist of the sighting immediately.
- f. Document each load of water drafted from the Sugar Pine Reservoir in terms of gallons per project per truck per day and provide a written report to the Public Services Officer every two weeks.
- g. Any spill into the water shall be immediately contained and reported to the Forest Service dispatch.
- h. Leave one lane of travel at the Sugar Pine Boat Ramp open for recreation use during drafting.
- i. No water drafting from Big Reservoir without owner’s written permission.

45. Prescribed Fire Activities

- a. To minimize the spread of fire into riparian vegetation during prescribed fire activities, no direct ignition will occur within riparian buffers, unless otherwise agreed by the Hydrologist, Botanist, or Aquatic Biologist. Fire may back into the riparian buffer.

- b. Place burn piles a minimum of 100 feet away from perennial and intermittent streams and 25 feet from ephemeral streams. Locate piles outside areas that may receive runoff from roads.
 - c. Within CRLF habitat (less than 5,200 feet and within 300 feet of perennial or intermittent streams), prescribed burning would not take place during rain or within 4 days following a rain event depositing more than 0.25 inches. Directional hand pile lighting – all hand piles must be ignited on only one side of the pile, not to exceed half the circumference of the pile, on the side furthest from the nearest aquatic feature.
46. Limited Operating Period. During the wet season (defined as starting with the first frontal rain system that deposits a minimum of 0.25 inches of rain after October 15 and ending April 15), do not perform mechanical operations within 300 feet of suitable habitat for California red-legged frog (e.g. intermittent or perennial streams, ponds, springs, and seeps).
47. Report incidental detections of federally-listed and sensitive aquatic species prior to or during project implementation to the District Fisheries Biologist for protection in accordance with management direction for the Tahoe National Forest.
48. If any California red-legged frog is found during the pre-activity survey or at any time during the Project, vacate the immediate area and leave the frog alone. No activity will occur in that area until such time as the frog has left the area on its own. Do not handle California red-legged frogs during any activity related to the Project.
49. To reduce the potential for adverse cumulative watershed effects, implement state certified Best Management Practices (BMPs). Site specific BMPs applicable to this project are located in project record file.

DETERMINATIONS:

It is my determination that the Sunny South Project **will not affect** Valley elderberry longhorn beetle, Delta smelt, Lahontan cutthroat trout, Central Valley steelhead, Central Valley spring-run Chinook salmon, winter-run Chinook salmon (Sacramento River), Sierra Nevada yellow-legged frog, designated critical habitat for the California red-legged frog, or proposed critical habitat for Sierra Nevada yellow-legged frog.

It is my determination that the Sunny South Project **may affect but is not likely to adversely affect** Layne's butterweed and the California red-legged frog.

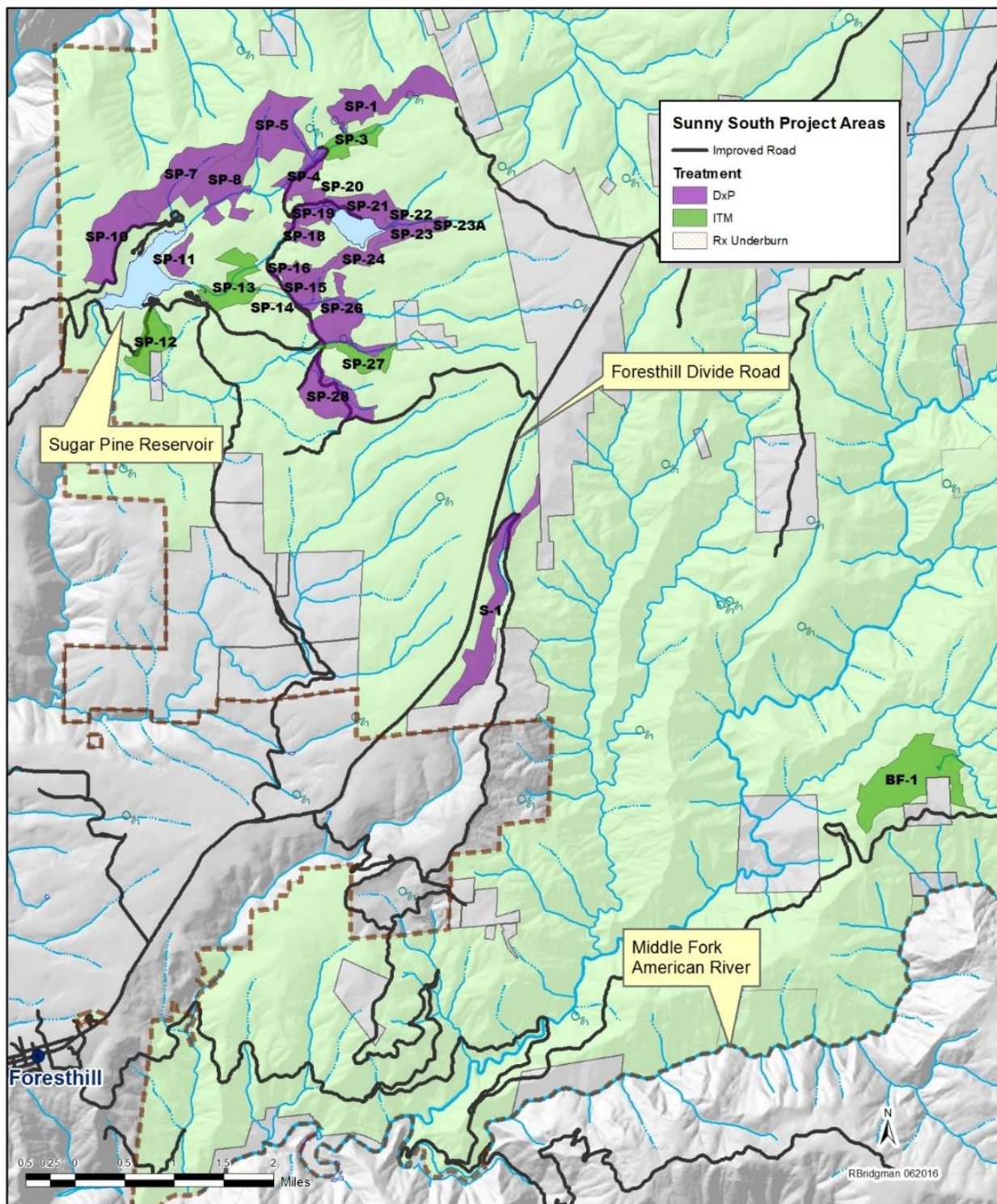


Figure 1. Sunny South Project, Proposed Action

II. INTRODUCTION

The purpose of this Biological Assessment (BA) is to document analysis of the potential effects of the proposed Sunny South Project to animal species and their habitats shown in Table 1. Species considered for analysis include United States Department of the Interior Fish and Wildlife Service (USFWS) threatened, endangered, candidate, and proposed species maintained at 50 CFR 17.11 (verified June 7, 2016). This Biological Assessment was prepared in accordance with Forest Service Manual (FSM) direction 2672.24 and meets legal requirements set forth under Section 7 of the Endangered Species Act of 1973, as amended, and implementing regulations [19 U.S.C. 1536 (c), 50 CFR 402.12 (f) and 402.14 (c)].

III. CONSULTATION TO DATE

The USFWS is contacted every 90 days to obtain a current list of endangered, Threatened, Proposed, and Candidate species that may be affected by activities on the Tahoe National Forest. Initial contact with the United States Fish and Wildlife Service (USFWS) Forest and Foothills Branch Office in Sacramento, CA for this project occurred (regarding *Rana draytonii*) April 5, 2016. Consultation regarding this species, which is not known to occur in the analysis area but has suitable habitat that may be affected by the proposed action (refer to Section VI “Existing Environment, Effects of the Proposed Action, and Determinations” for the rationale that led to each determination), will be completed upon receipt of a USFWS letter of concurrence. Two site visits with USFWS personnel from the Sacramento office were conducted in 2016.

Forest Plans for National Forests in the Sierra Nevada were amended under the Sierra Nevada Forest Plan Amendment (USDA Forest Service 2001 and 2004). The Regional Forester consulted with the California and Nevada Operations Offices of Fish and Wildlife Service for that amendment. The Biological Opinion for the amendment was dated January 11, 2001. The determination in the biological opinion was that the selected action was not likely to jeopardize the continued existence of species listed pursuant to the Act (bald eagle (subsequently delisted), California red-legged frog, valley elderberry longhorn beetle, and Lahontan cutthroat trout). No terms or conditions were provided. Conservation recommendations are discussed in the corresponding species portions of this Biological Assessment where applicable to Tahoe National Forest species and management activities.

IV. CURRENT MANAGEMENT DIRECTION

Current management direction on desired future conditions for endangered, threatened, proposed, or candidate species on the Tahoe National Forest can be found in the following documents, filed at the District Office:

- Forest Service Manual and Handbooks (FSM/FSH 2670)
- National Forest Management Act (NFMA)
- Endangered Species Act (ESA)
- National Environmental Policy Act (NEPA)
- Tahoe National Forest Land and Resource Management Plan (Forest Plan, 1991). The Tahoe NF Forest Plan includes various amendments, of which the Sierra Nevada Forest Plan Amendment Final Environmental Impact Statement (SNFPA 2001; USDA Forest Service 2001) and the Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement (SNFPA 2004; USDA Forest Service 2004) included substantial changes to management for the protection of wildlife. Detailed information including specific standards and guidelines for species management can be found in the SNFPA 2004.
- Species specific Recovery Plans which establish population goals for recovery of those species

- Species management plans
- Species management guides or conservation strategies
- Regional Forester policy and management direction

General Forest Service direction for threatened and endangered species is summarized below:

FSM 2670.31 THREATENED AND ENDANGERED SPECIES

1. Place top priority on conservation and recovery of endangered, threatened, and proposed species and their habitats through relevant National Forest System, State and Private Forestry, and Research activities and programs.
2. Establish through the Forest planning process objectives for habitat management and/or recovery of populations, in cooperation with States, the USFWS, and other Federal agencies.
3. Through the biological evaluation process, review actions and programs authorized, funded, or carried out by the Forest Service to determine their potential for effect on threatened and endangered species and species proposed for listing.
4. Avoid all adverse impacts on threatened and endangered species and their habitat except when it is possible to compensate adverse effects totally through alternatives identified in a biological opinion rendered by the USFWS, or when the USFWS biological opinion recognizes an incidental taking. Avoid adverse impacts on species proposed for listing during the conference period and while their Federal status is being determined.
5. Initiate consultation or conference with the USFWS when the Forest Service determines that proposed activities may have an adverse effect on threatened, endangered, or proposed species or when Forest Service projects are for the specific benefit of a threatened or endangered species.
6. Identify and prescribe measures to prevent adverse modification or destruction of critical habitat and other habitats essential for the conservation of endangered, threatened, and proposed species. Protect individual organisms or populations from harm or harassment as appropriate.

V. DESCRIPTION OF THE PROPOSED ACTION

The proposed action includes about 2,800 acres of treatments including: thinning of at-risk stands, mastication, prescribed burning, soil decompaction of non-system routes, commercial removal of dead and dying trees, and reforestation on NFS lands. The project includes two main project areas consisting of Sugar Pine Reservoir and Big Oak Flat.

Reduce Stand Density and Remove Insect-Killed Trees

Forest stands would generally be thinned from below. Live trees greater than 10 inches diameter at breast height (dbh) and up to 30 inches dbh would be considered for commercial thinning. A target stand density index (SDI) is below 230, with residual basal areas ranging from 80 to 125 square feet per acre in the plantations and 120 to 200 square feet per acre in the mixed conifer units. On a treatment area average, thinning treatments will retain at least 40 percent canopy cover in mature forest habitat and at least 50 percent canopy cover in mature forest habitat in California spotted owl Home Range Core Areas (HRCAs). No trees are identified for removal in the spotted owl or northern goshawk Protected Activity Centers (PACs).

Dead and dying beetle-infested trees would be felled and removed; these occur in a variety of patch sizes throughout the treatment areas. Patch sizes range from small patches of three to five trees to areas as large as 15 acres. Removing these trees will create gaps that will be reforested with a mixture of conifer species to increase the species diversity in the treated stands, improving their resilience to future insect and disease infestations.

Thinning would remove competing conifers within 10 feet of hardwood tree driplines to reduce competition. In some instances conifer would be removed from around individual hardwoods, while in other sites conifers would be thinned from around entire clumps of small patches of oaks. The focus of thinning would be on full-crowned, healthy hardwoods that are surrounded by small-diameter conifers.

The largest trees, with live crown ratios greater than 40 percent and free of damage and disease would be generally retained throughout the treatment areas. In the natural stands, retention would be in order of sugar pine, ponderosa pine, Douglas-fir, and incense cedar over white fir. In single-species dominated stands, the least represented species would be retained over the more predominate species to promote species diversity. Smaller trees would be thinned from around large, full-crowned conifers to provide additional growing space, to create conditions for rapid diameter growth, and to help ensure the survival of these relatively uncommon trees.

Fall and, if needed, jackpot pile for burning pockets of unmerchantable dead and dying beetle-infested trees to create gaps throughout the treatment areas. Thin at the edges of these pockets to remove trees that are infested with beetles. Limit this additional thinning around beetle pockets to the area within one tree length from the edge of the pocket. Unit wide, retain snags and large woody debris to meet management requirements for soils, wildlife and fuels.

When cutting trees in recreation areas, all conifer stumps greater than 3 inches in diameter will be treated with a registered borate compound to reduce the probability of infection by *Heterobasidion occidentale* and *H. irregular*, the causal agents of Heterobasidion root disease (formerly referred to as annosus root disease). In all other areas, treat conifer stumps greater than 14 inches in diameter.

Conduct whole-tree, ground based-yarding on approximately 2,455 acres. To control erosion and soil disturbance, downhill tractor activity will be limited to less than 35 percent slopes and uphill to less than 25 percent unless the leading end is suspended. Whole-tree cable yard 239 acres on slopes generally greater than 30 percent. Bunch the material in cable units with a feller-buncher prior to yarding to the landing. Yard cut material greater than four inches diameter to the landing, with the exception of broken portions of logs and tops less than eight feet in length. Figure 1 shows the unit locations in the Sugar Pine Reservoir, Seed Orchard, and the Big Oak Flat areas.

Riparian Conservation Areas (RCAs): RCAs have some of the highest stand densities in the project area due in part to fire suppression and exclusion from past vegetation management activities. In consultation with the West Zone Hydrologist and Fisheries Biologist, vegetation and fuels reduction treatments, including mechanical treatments, are proposed within the RCAs on a site specific basis. This would occur where:

- topography or existing infrastructure allows equipment to enter without creating un-mitigatable disturbance;
- site-specific mitigations described in the Management Requirements section of this document would ensure these activities would not have adverse effects to watershed function and would be completed at the time of implementation; and
- treatments are consistent with the Forest Plan standards and guidelines and riparian conservation objectives (RCO's) described in the 2004 SNFPA ROD.

Archaeology site treatments: In consultation with the Archaeologist, treat approximately 2 acres in archaeology sites in units SP-8 and BF-1 to reduce the fuels build-up on-site. Hand cut small trees up to 6 inches dbh. Hand carry cut material or toss it past the flag line, scattering it for future burning.

Hazard Trees: Fall and leave on site or fall and remove trees posing an imminent hazard to vegetation and fuels management operations as well as public safety along NFS roads and trails within the treatment unit boundaries. Limit hazard tree treatments (either falling and leaving or falling and removing hazard trees) to trees that could impact the road and threaten public safety if they failed (generally within 200 feet of the road), and utilize the Forest Service Pacific Southwest Region's Hazard Tree Marking Guidelines to identify hazard trees. Fall identified hazard trees and leave in place or

remove if commercially viable by yarding felled trees and/or endlining to the road. Limit ground-based equipment to slopes less than 30 percent for hazard tree removal operations.

Rust Resistant Sugar Pine Trees: Two rust resistant sugar pines (RRSP) are located within the Sunny South Project area (2 acres) in units SP-1 and SP-28. These trees are important because they were identified as seed trees that are immune to sugar pine rust, which has killed many trees. The RRSP protection strategy would further reduce stand density immediately surrounding the RRSP to promote the health of the individual tree and any adjacent conifers greater than 30 inches dbh, increasing the resilience of these trees to insects and disease. All trees less than 30 inches dbh within 25 feet of the drip line. In addition, the treatments for these RRSPs would reduce surface and ladder fuels that create hazardous conditions for tree survival during wildfires. The range of treatments may include fireline construction, shrub cutting, piling of slash and brush, pile burning, chipping, and removal of trees from sapling size up to 30 inches dbh, using ground-based equipment. Surrounding tree density would be reduced within 150 to 300 feet of the RRSP (between approximately 1.6 to 6.5 acres of vegetation treatments). Heavy duff and litter accumulations within two to three feet of the base of each tree would be raked away.

Table 3. Units with acres, basal area, canopy closure and fuels treatments

Unit	Plantation or Mixed Conifer	Acres	HRCA ¹	Target Canopy Closure	Expected Basal Area	Harvest and Fuels Treatments
BF-1	Mixed Conifer	314.9	y	50%	120	WTY ² , underburn
S-1	Plantation	219.2	n	40%	100	Bunch WTY, underburn
SP-1	Plantation	194.7	n	40%	100	WTY, underburn
SP-3	Mixed Conifer	65.3	n	40%	100	WTY, underburn
SP-4	Plantation	79.0	y	50%	120	WTY, underburn
SP-5	Plantation	196.6	y	50%	120	WTY, underburn
SP-7	Plantation	181.6	y	50%	120	WTY, underburn
SP-8	Plantation	186.8	y	50%	120	WTY, underburn
SP-10	Plantation	176.2	y	50%	120	WTY, underburn
SP-11	Plantation	41.1	y	50%	120	WTY, grapple pile and burn, or jackpot pile and underburn
SP-12	Mixed Conifer	94.3	y	50%	160	WTY, underburn
SP-13	Mixed Conifer	118.3	y	40%	100	WTY, masticate, underburn
SP-14	Mixed Conifer	43.4	n	NH	NH	Underburn
SP-15	Plantation	75.2	y	50%	120	WTY, underburn
SP-16	Plantation	39.1	y	50%	120	WTY, underburn
SP-18	Plantation	36.6	y	50%	120	WTY, underburn
SP-19	Plantation	50.8	y	50%	120	WTY, underburn
SP-20	Mixed Conifer /Plantation	20.5	y	40%	100	WTY, underburn
SP-21	Plantation	91.6	n	40%	100	WTY, underburn
SP-22	Plantation	22.6	n	40%	100	WTY, underburn
SP-23	Plantation	32.1	n	40%	100	WTY, underburn
SP-23A	Plantation	20.3	n	40%	100	WTY, underburn
SP-24	Plantation	65.3	n	40%	100	WTY, underburn
SP-26	Plantation	151.9	n	40%	100	WTY, underburn
SP-27	Mixed Conifer	64.3	n	40%	160	WTY, underburn
SP-28	Plantation	156.9	n	40%	100	WTY, underburn
Total		2737				

¹HRCA=Home Range Core Area; WTY = Whole tree yard

Table 4. Summary of proposed vegetation and fuels management activities

Treatment	Acres
Ground-based thinning and follow-up fuels treatment units	2,455
Cable thinning and follow-up fuels treatment units	239
No harvest units have fuels treatments only	43
Total Acres	2,737

Fuels Treatments

In the ground-based and the cable-based harvest units, treat the non-commercial trees (4 to 9.9 inches dbh) by whole-tree yarding to the landing, pile and burn, or chip and remove the material as biomass. Bunch the material in cable units with a feller buncher prior to yarding to the landing. Following the whole-tree yarding, evaluate these units for follow-up surface and activity fuel treatments. Treat fuels in the area with prescribed burning, mainly underburning, or hand pile and burn the piles. Grapple pile (using tracked-based equipment) and burn surface fuels on up to 25 percent of the harvested units prior to underburning, based on economic feasibility and existing surface fuel conditions. Pile and burn up to 25 percent of the harvested units emphasizing areas with pockets of dead or unmerchantable material. Piles may be burned under conditions where the fires could be allowed to spread and effectively underburn portions of the stand concurrently. Trees greater than 40 inches dbh and/or trees with previous fire (“cat-face”) scars may have duff and vegetation cleared away from their boles in order to provide additional protection during prescribed burning. Complete and approve a site and condition specific prescribed fire plan prior to burning. Mechanically masticate brush and non-commercial trees in SP-13 and follow up with an underburn when the trees are able to withstand ground fire.

Unit SP-14 would not be harvested and no mechanical treatments are planned. Prescribed fire, mainly consisting of underburning, would be applied on 43 acres to reduce fuels and increase resilience to drought and insect infestation. Hand pile and burn if needed.

Soil Decomposition

Subsoil or rip compacted soil on approximately 9 miles (13 acres) of existing unauthorized routes, landings, main skid trails and temporary roads with equipment such as a winged sub-soiler or other tilling device to a depth of 12 to 18 inches. Break up the compaction and incorporate organic matter into the upper few inches of the soil column to allow rain and snowmelt to infiltrate the soil and get stored in the organic matter. Install drainage features, such as waterbars, as needed to prevent concentrated flows from causing erosion. Complete tillage/sub-soiling outside of the tree drip line so as not to impact root systems. Block off by placing cull log in front of road and cover log with soil.

Reforestation

In areas of concentrated mortality, reforest using a combination of site preparation, plant and release treatments. Site preparation would include tilling the top soil, as needed, to remove brush and other competing vegetation to facilitate the planting effort. Up to 10 percent of the planted areas may need tilling where 20 percent or more of the reforestation area is covered by brush. Plant a variety of tree species: Douglas-fir, incense cedar, ponderosa pine, and sugar pine. Release for survival by manually grubbing a 5-foot radius around the planted trees until they are established above the competing vegetation. Reforestation efforts are planned for approximately 600 acres within the project area, although the number of acres needing reforestation could rise if tree mortality increases prior to implementation.

VI. EXISTING ENVIRONMENT, EFFECTS OF THE PROPOSED ACTION AND DETERMINATIONS

Analysis Methodology

Extent and duration of effects

It is difficult to state with certainty how far and when the effects of the proposed activities will no longer alter the life history dynamics or habitat of federally listed species considered in this analysis. For animals, analysis areas and duration effects are species-specific and discussed under each species. For plants, extent and duration of effects is assumed to be fairly uniform. For plants, the area analyzed encompasses approximately 26,000 acres and consists of all proposed activities, access roads to the project area, and an area approximately one mile around all proposed activities. This one-mile buffer was selected to capture all potential rare botanical species and invasive plants that (a) occur within the project area, (b) have suitable habitat within the project area, (c) are near enough to potentially be affected indirectly by project activities, or (d) have source populations (i.e. potential for seed dispersal) located within close proximity to the proposed activities. For plants, the following assumptions were employed to assess duration of effects: 1) Short-term effects are those lasting less than 10 years; beyond 10 years, effects are considered long-term, except when specified as permanent; 2) For harvest, mechanical thinning and temporary road construction, recovery time of the vegetation to current conditions is approximately 50 years. For hand thinning and underburning, recovery time of the vegetation to current condition is approximately 20 years. 3) Soil decompaction and road decommissioning are considered permanent.

Species Analyzed

USFWS maintains an Information for Planning and Conservation tool (IPaC) that lists which federally threatened, endangered, proposed and candidate species that may be present on Tahoe National Forest. USFWS is contacted every 90 days to obtain a current official TNF list; most recent list is dated June 28, 2016 (Appendix A). All federally listed species that are known or have suitable habitat on TNF were considered.

It is assumed that the project will not effect species that do not occur or have suitable habitat within the analysis area and that such species do not require further analysis. Species presented below (Table 5) either do not occur or have suitable habitat within the analysis area. Therefore, they will not be affected by the project and are not analyzed further.

Table 5. Species eliminated from further analysis for the Sunny South Project

SPECIES	SPECIES STATUS ¹	EFFECTS DETERMINATION	RATIONALE FOR DETERMINATION
PLANT SPECIES			
None			
ANIMAL SPECIES			
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	T	No Effect	No suitable habitat
Delta smelt (<i>Hypomesus transpacificus</i>)	T	No Effect	Outside the range for this species
Lahontan cutthroat trout (<i>Oncorhynchus clarki henshawi</i>)	T	No Effect	Outside the range for this species
Central Valley steelhead (<i>Oncorhynchus mykiss</i>)	T	No Effect	Outside the range for this species due to dams
Central Valley spring-run chinook salmon (<i>Oncorhynchus tshawytscha</i>)	T	No Effect	Outside the range for this species due to dams

SPECIES	SPECIES STATUS ¹	EFFECTS DETERMINATION	RATIONALE FOR DETERMINATION
Winter-run chinook salmon, Sacramento River (<i>Oncorhynchus tshawytscha</i>)	E	No Effect	Outside the range for this species due to dams
Sierra Nevada yellow-legged frog (<i>Rana sierrae</i>)	E	No Effect	Outside the range for this species

¹ U.S. Fish and Wildlife Service (USFWS) Threatened (T) or Endangered (E) species.

Nearby recent projects have analysed for *Calystegia stebbinsii* (Stebbin's morning glory). Stebbin's morning glory does occur in Nevada and Placer counties, though is limited to foothill pine habitat below 3,600ft (US Fish and Wildlife Service 2002). There is an occurrence of VanZuuk's morning glory (*Calystegia vanzuukiae*) on TNF at Sage Hill (near Foresthill, Placer County) that was erroneously identified as Stebbins morning glory at its discovery in 2010; however, in 2013, the occurrence was positively identified as VanZuuk's morning glory by R.K. Brummitt—who described both species (R.K. Brummitt 1974; R. K. Brummitt and Namoff 2013). There are no Stebbin's morning glory occurrences known on TNF (California Department of Fish and Wildlife 2016). The potential for suitable habitat on the forest is very limited due to elevation and plant community. For these reasons, it was not included in this analysis. .

Based on the lack of suitable habitat and/ or potential for effects to individuals or habitat, the following are my determinations of effects for the above species: it is my determination that the Sunny South Insect Treatment Project **will not affect** Valley elderberry longhorn beetle, Delta smelt, Lahontan cutthroat trout, Central Valley steelhead, Central Valley spring-run Chinook salmon, winter-run Chinook salmon (Sacramento River), Sierra Nevada yellow-legged frog, or designated critical habitat for these species.

California red-legged frog and Layne's butterweed are analyzed further in this biological assessment.

Effects discussion structure

Section A describes the existing environment including species life history, best available science, status, and relevant information. Further detail can be found in the Sierra Nevada Forest Plan Amendment Final Environmental Impact Statement and Record of Decision (SNFPA 2001; USDA Forest Service 2001) and Sierra Nevada Forest Plan Amendment Record of Decision and Final Supplemental Environmental Impact Statement and Record of Decision (SNFPA 2004; USDA Forest Service 2004).

Section B addresses the effects of the proposed project and, including relevant management requirements. Effects are described as direct, indirect or cumulative. Direct effects occur when individuals are physically impacted. For animals, this refers to mortality or disturbances that result in alterations in fitness, flushing, displacement or harassment of the animal. For plants, this refers to physically breaking, crushing, burning, scorching, or uprooting results in death, altered growth, or reduced seed set. Indirect effects are separated from an action in either time or space. These effects, which can be beneficial or detrimental. For animals, this refers to modification of habitat and/or effects to related (e.g. prey) species. For plants, this refers to modification of habitat, seed bank or gene flow. Cumulative effects represent “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (National Environmental Policy Act 1986). While ESA defines cumulative effects as “those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation” (Endangered Species Act, 1973, as amended), this analysis includes both Federal and non-Federal activities in the analysis area, in order to comply with NEPA.

Section C provides a summary of supporting conclusions and the statement of determination based upon relevant information provided in Sections A and B.

California Red-legged Frog (*Rana draytonii*)

A. Existing Environment

The California red-legged frog, *Rana draytonii*, was federally-listed as threatened on June 24, 1996 (USDI Fish and Wildlife Service 1996). A Final California Red-legged Frog Recovery Plan was released on September 12, 2002 (USDI Fish and Wildlife Service 2002b; 67 FR 57830). Then on March 17, 2010, the USFWS finalized designation of critical habitat within three locations in or adjacent to the Tahoe National Forest (USDI Fish and Wildlife Service 2010; 75 FR 12816), including PLA-1 (Michigan Bluff), NEV-1 (Sailor Flat), and YUB-1 (Oregon Creek). The Recovery Plan objective is to reduce threats and improve the population status of the California red-legged frog sufficiently to warrant de-listing. The strategy for recovery includes protecting existing populations by reducing threats, restoring and creating habitat that will be protected and managed in perpetuity, surveying and monitoring populations, conducting research on the biology of the species and threats to the species, and re-establishing populations of the species within the historic range.

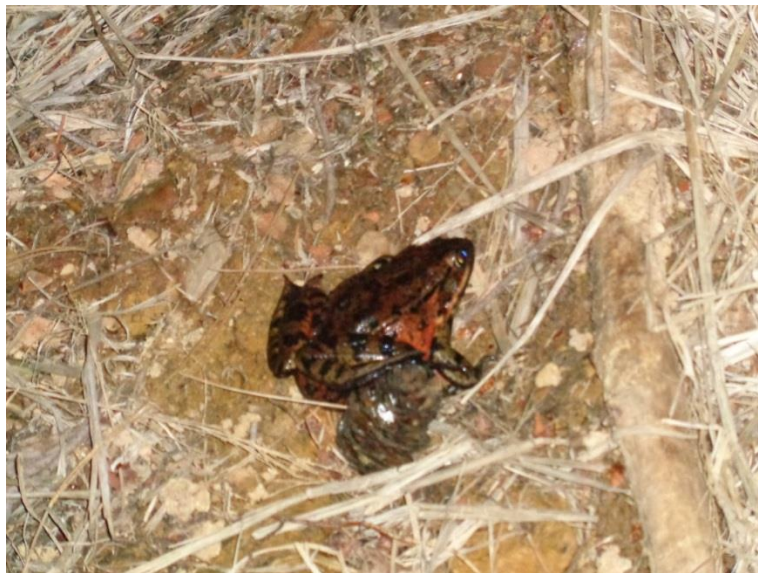


Figure 2. Red-legged Frog Adult. Source: Neil Keung, Eldorado National Forest.

The western portion of Tahoe National Forest is located within the Sierra Nevada recovery unit (Recovery Unit #1) (USDI Fish and Wildlife Service 2002b). The Plumas and Tahoe National Forests share Core Area #2 (Yuba River-South Fork Feather River) located in Yuba County (USDI Fish and Wildlife Service 2002b). This core area includes a portion of the North Yuba River around New Bullards Bar Reservoir. Recovery actions are to be focused within core areas.

The Recovery Plan for the California Red-legged Frog (USDI Fish and Wildlife Service 2002b) indicates that current and historic distribution of the species is west of the Sierra-Cascade crest. “While nearly all of the known California red-legged frog populations have been documented below approximately 1,050 meters (3,500 feet), some historical sightings were noted at elevations up to 1,500 meters (4,000 feet) (Ibid).

The California red-legged frog is a highly aquatic species typically found in cold water ponds and stream pools with depths exceeding 0.7 meters and with overhanging vegetation such as willows, as well

as emergent and submergent vegetation (Hayes & Jennings 1988). It is generally found at elevations below 4,000 feet, but has been found higher (Martin 1992). It is generally found in or near water but has been known to disperse away from water after rain storms (Martin 1992). This species breeds along aquatic vegetation in deep, slow water (<2% gradient) environments during the months of November through March in most of their current range (USDI Fish and Wildlife Service 1996). Breeding in the Sierra Nevada foothills would occur later due to freezing temperatures between November and February. Breeding would likely occur between March and May at higher elevations (Freel 1997, personal communication). Permanent or nearly permanent pools are required for tadpole development, and emergent and overhanging vegetation is used as refugia by adult frogs. Ponds with cattails or other emergent vegetation provide good cover (Martin 1992). The amount of time to metamorphosis is highly dependent on temperature (Calef 1973). Tadpole development takes 11 to 20 weeks (Storer 1925, Calef 1973). Water quality is also very important. Adult frogs normally become sexually mature in two (males) to three (females) years and can live as long as ten years or more.

The California red-legged frog requires permanent aquatic habitats for breeding, feeding and shelter. As adults, they may also utilize moist, sheltered, terrestrial habitats near streams. In the proposed ruling to list this species, the United States Fish and Wildlife Service cited Rathburn et al. (1993) in reporting that this frog estivates in small mammal burrows and moist leaf litter up to 85 feet from water in dense riparian vegetation. This behavior occurs where aquatic habitat is intermittent in nature. During wet periods, especially in winter and early spring months, California red-legged frogs disperse away from breeding habitat to seek suitable foraging habitat. This dispersal behavior can result in the occurrence of California red-legged frogs in isolated aquatic habitats as far as one mile from their natal pond.

Ideal breeding habitat of California red-legged frogs is characterized by dense, shrubby riparian vegetation associated with deep (> 2 feet), still or slow-moving water (Jennings 1988, Hayes and Jennings 1988). Shrubby riparian vegetation, that seems to be most suitable for California red-legged frogs structurally, is provided by willow, cattails and bulrushes (Jennings 1988). However, California red-legged frogs have been found in less than ideal habitats and a combination of these factors is more important than an individual habitat component (Hayes and Jennings 1988). Small to medium perennial streams can also provide breeding habitat if they are not subjected to scouring flows during egg development. Streams in this category generally have the potential for deep pools and riparian vegetation, which provide required habitat elements for this frog. Permanent or nearly permanent pools that hold water into the summer are required for tadpole development. Emergent and overhanging vegetation is used as a brace for egg deposition and as cover by adult frogs.

While California red-legged frogs are generally found in or near water, individual frogs may make overland excursions through upland habitats during the wet season (USDI 2002b). These movements may be one mile (and occasionally up to 2 miles) from permanent or seasonal aquatic habitats without apparent regard to topography, vegetation type, or riparian corridors (USDI 2002b). Dispersal habitat generally includes moist, shaded areas with vegetation that provides cover, however; individuals may move through areas that could be considered to be unsuitable for frogs. Normally, frogs travel along riparian corridors and can be found adjacent to streams, meadows or marsh areas. Adults feed primarily on aquatic and terrestrial invertebrates, but large adults will eat small rodents such as deer mice (Jennings 1997, personal communication).

This species is highly restricted in the Sierra Nevada foothills, and has been eliminated from 75 percent of its historic range (Jennings 1992). Habitat loss and alteration, the introduction of bullfrogs and other aquatic predators, and historic timber harvest have been implicated in the population decline (Jennings 1988, Moyle 1973).

Due to habitat alteration and exotic species, there is limited suitable habitat for California red-legged frog (CRLF) on the Tahoe National Forest. In 1997, Dr. Gary Fellers (retired, USGS, Point Reyes, CA)

surveyed all known suitable CRLF habitat on the forest. Dr. Fellers is an expert herpetologist familiar with this species. His conclusion on the suitability of Tahoe National Forest System lands for CRLF was: "I am pretty comfortable with saying that there are few or no populations remaining on federal land that we visited. There remains a fair possibility that a few populations may exist on private lands, but those are largely inaccessible to us."

Critical Aquatic Refuges are small sub-watersheds that contain either:

- Known locations of threatened, endangered or sensitive species,
- Highly vulnerable populations of native plant or animal species, or
- Localized populations of rare native aquatic- or riparian-dependent plant or animal species.

Tahoe National Forest currently has two Critical Aquatic Refuges (CARs): Upper Independence Creek and Sierra Buttes, neither of which has known population(s) of California red-legged frog.

Potential risk factors to the California red-legged frog from resource management activities include modification or loss of habitat or habitat components, primarily aquatic and adjacent riparian environments used for reproduction, cover, foraging, and aestivation. Egg survival can be impacted by mining and road/trail construction through increases in fine sediments. Livestock grazing directly affects riparian vegetation, emergent vegetation, causes nutrient loading, and also affects channel morphology and hydrology. Timber harvest can result in loss of riparian vegetation and increased erosion and siltation of aquatic habitats (USDA Forest Service 2001).

Conservation Recommendations (USDI Fish and Wildlife Service 2001) that may be applicable to Tahoe National Forest management activities include:

1. Assist the USFWS in implementing recovery actions identified within the Draft Recovery Plan for the red-legged frog, including:
 - a. Working with the USFWS and other interested parties in developing a reestablishment program for red-legged frogs on National Forest Land.
 - b. Developing a non-native predator (e.g. bullfrogs and warm water fish spp.) eradication program.
2. Any individuals handling California red-legged frogs should be prior-approved by the USFWS. All trapping protocols utilized should be pre-approved by the USFWS.
3. Prior to activities within Core Areas identified in the California Red-legged Frog Recovery Plan, a Landscape Analysis should be completed and submitted for approval by the Service. The Landscape Analysis should include, but not be limited to the following:
 - a. Discussions of the management and maintenance in perpetuity of the habitats for California red-legged frogs.
 - b. Discussions of runoff control and maintenance of hydrology of the aquatic habitat.
 - c. Provisions for the design and implementation of a bullfrog eradication program for all aquatic areas.
 - d. Provisions for management and maintenance of upland habitat within the Core Areas.
 - e. Provisions for a written report to the USFWS, and CDFG on the functioning of the Core Areas five years after the completion of the Landscape Analysis. The report should recommend management (subject to review and approval by the USFWS and CDFG) necessary to ensure the continued functioning of Core Areas as California red-legged frog habitat.
4. At least 80 percent of natural streambank stability should be maintained at the end of the authorized grazing season in areas that are occupied by California red-legged frogs or provide habitat within CARs. This means that no more than 20 percent of the natural streambank stability could be altered by activities such as, but not limited to livestock trampling, chiseling and sloughing, OHV-use, stream crossings, and recreational use.

5. Encourage or require the use of appropriate California native species in re-vegetation and habitat enhancement efforts associated with projects authorized by the Forest Service.

Tahoe National Forest biologists regularly document amphibians found in aquatic habitats and conduct stream surveys annually across portions of the Forest. Suitable habitat such as marshes, ponds and low gradient streams occur on a number of sites within the historical range of this species on the Tahoe National Forest. Intensive surveys for California red-legged frogs have been conducted on the Tahoe National Forest since 1996. Within suitable habitat, most of these surveys have followed USFWS California red-legged frog survey protocol (1997, revised 2005). Since the release of the 2005 protocol, surveys follow the new 8-visit protocol.

Two specimens at the Museum of Vertebrate Zoology, University of California at Berkeley, originated from very near or within the Tahoe National Forest. One of the historic locations is northeast of the town of Dutch Flat (T15N R10E, elevation 3,200 feet) where specimens were collected in 1916 and 1939. It is unknown whether the latter occurrences were on private or public land. The other historic record is from 1964 (J. Dixon) near Michigan Bluff at Byrds Valley (T14N R11E, elevation 3,200 feet) on private land. A 1997 survey of this site by a USGS NBS biologist noted that there is very little water available and that there was no suitable breeding habitat for frogs. Prior to the flooding of New Bullards Bar Reservoir, several wetlands existed that could have supported California red-legged frogs. The detection (Sept. 15, 2000) of frogs in Little Oregon Creek (a tributary to New Bullards Bar Reservoir) on the Plumas National Forest could represent a remnant population from wetlands that are now gone. This population is approximately one mile from New Bullards Bar Reservoir. Also to the north of Tahoe National Forest there is a California red-legged frog population at a pond on a private parcel in the French Creek drainage within Butte County (Barry 1999) more than 10 miles from Tahoe National Forest. There is one known occurrence of this species on the Eldorado National Forest, located south of the Tahoe National Forest. On June 18, 2001, one female was detected in a pond on Ralston Ridge on the power line transmission corridor. The pond was dry several weeks later and dispersal of this individual remains unknown. This pond is approximately one mile from the Tahoe National Forest. In 2003, a population of CRLF was found on private land in a permanent pond on an ephemeral tributary to the South Yuba River. This site is near the Rock Creek watershed at approximately 3,000 feet elevation.

In 2006, a red-legged frog site was discovered in the vicinity of Michigan Bluff on private land, near the town of Foresthill. Approximately 50 adults were observed in July 2006 inhabiting the historic Big Gun Diggings mine tailing ponds (elevation 3,335 feet) just east of a historic occurrence reported prior to 1951. The Recovery Plan for the California Red-legged Frog (USFWS 2002b) was written prior to the discovery of this species near Michigan Bluff so approximately 1,245 acres were designated as critical habitat (PLA-1) in 2010 (USFWS 2010, 75 FR 12816). The designated critical habitat (PLA-1) is located approximately 1.3 miles south of the Sunny South Project area.

The Michigan Bluff population is within the Big Gun Conservation Bank owned by Westervelt Ecological Services Company. The Big Gun Conservation Bank contains 7-ponds. The California red-legged frog breeds in three of these ponds. In 2015 over 200 adult California red-legged frogs were observed at these ponds inside the Big Gun Conservation Bank (M. Young, personal communication, 2015).

Low gradient (4 percent or less) perennial and intermittent stream reaches exist within 2 miles of the project area in Shirttail Creek, Forbes Creek, Page Creek, and Peavine Creek, but these lack the requisite characteristics (e.g. emergent vegetation and adequate depth) of suitable breeding habitat or have unsuitable dynamics such as scouring flows. Non-breeding habitat exists in intermittent and perennial streams and wetlands (e.g. ponds, springs, and seeps) below 4,000 feet elevation within two miles of the project. California red-legged frogs have not been detected and are not known to occur in these intermittent and perennial streams and wetlands.

Three phase 1 California Red-legged Frog Habitat Site Assessments were conducted in the Sunny South Project area (See Appendix B). These sites were selected based on their proximity to known waterbodies and potential CRLF breeding habitat. The Pagge Creek site was selected because of its vicinity to a known pond on private property. Observations of this pond on the east shore on National Forest Land concluded that there are invasive fish species (centrarchids, likely sunfish and largemouth bass) and water quality issues. Bank full widths at all three phase 1 site assessments ranged from 6.3 meters to 23.7 meters. Depth at bank full was greatest at Forbes Creek which measured 0.4 meters. Non-pool habitat was dominated by low gradient riffles and runs. The stream substrate largely consisted of cobbles, gravels and fines. At each site assessment scouring flows and channel incision was observed. Emergent vegetation was lacking at all three sites.

In addition staff biologist for ECORP Consulting Inc., found the presence of bullfrogs in Sugar Pine Reservoir, Forbes Creek and Lower Shirttail Creek during CRLF Site Assessment surveys in 2015. This data suggests that bullfrogs are moving out of Sugar Pine Reservoir and occupying tributary stream habitat.

As noted above in the existing environment for CRLF, this species uses a variety of habitat types in various aquatic, riparian, and upland areas. Observed frog habitat includes but is not limited to, seasonal wetlands, permanent ponds, perennial creeks, riparian corridors, blackberry thickets and oak savannas. All red-legged frog habitat shares the common characteristic of proximity to a permanent water source. The CRLF is highly mobile and often disperses from breeding habitat in aquatic areas into various other aquatic, riparian, and upland areas habitat. Table 6 below summarizes the area (in miles and/or acres) of potential suitable habitat for this species within the Sunny South Project area. The acres in this table are all based on perennial and intermittent streams, waterbodies, wetlands, and springs only.

Table 6. Miles and acres of potentially suitable habitat <4,000 feet for CRLF within the Sunny South Project area, by subwatershed.

14-Digit HU Drainage	Total Miles of Stream within Project Area (CRLF)				
	Intermittent (miles)	Perennial (miles)	Lake/ Meadow/ Wetland Acres	Springs	Total Miles
Lower North Shirttail Canyon	3.36	2.01	5.14	1	5.37
Peavine Creek	0.0	0.18	0.3		0.18
Upper North Shirttail Canyon	1.56	7.07	162.68		8.63
Upper Shirttail Canyon			7.88		
Volcano Canyon	0.0	0.95	0.66		0.95
Humbug Canyon			0.26		
Indian Creek			0.41		
Middle Fork American River-Brushy Canyon			1.30		
North Fork American River-Giant Gap Gulch			9.54		
North Fork American River-Tommy Cain Ravine			0.73		
Grand Total	4.92	10.21	188.9	1	15.13

California Red-legged Frog distribution in proximity to the Sunny South Project

Of the known California red-legged frog (CRLF) sites located on the Tahoe National Forest, Michigan Bluff (PLA-1) is the nearest location in proximity to the Sunny South Project (See Figure 5). The

Michigan Bluff population is outside of the project area and is located approximately 2 miles south of the nearest unit in the Sunny South Project (Unit S-1), in a separate watershed. The Sunny South Project does not affect designated critical habitat (e.g. water quality and flow between the project area and PLA-1 are not connected).

Potentially suitable habitat for the CRLF was identified in the Sunny South Project area in perennial and intermittent streams and water bodies below 4,000 foot elevation; however, these streams and water bodies are not known to be occupied by the CRLF. Within the Sunny South Project there is a total of 10.21 miles of perennial stream channel habitat that provides potential CRLF habitat. Of the perennial stream miles inside the project boundary only 5.5 miles (53%) are less than 4 percent gradient. In addition there is nearly 4.92 miles of seasonal stream habitat that could be used for dispersal and migration corridors. There are also 188.9 acres of springs and water bodies that could provide potential CRLF habitat. A large majority of the 188.9 acres of potential CRLF habitat are derived from Sugar Pine Reservoir and Big Reservoir. These are large reservoirs with predatory fish and are not considered suitable CRLF habitat.

The Sunny South Project is located between 3,464 and 4,419 feet in elevation, which falls within the elevation limit) for recent and historic localities of CRLF (See Figure 3).

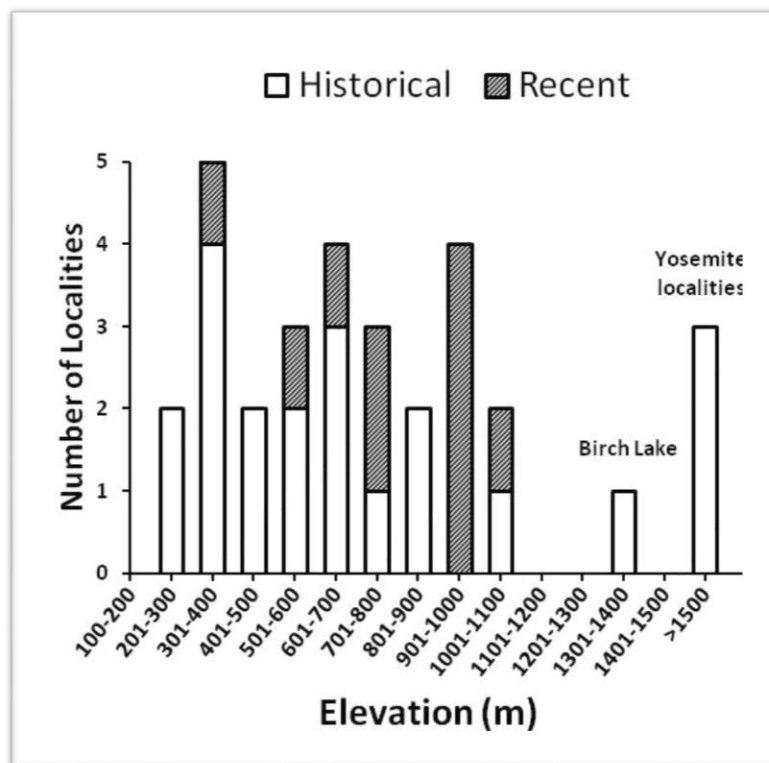


Figure 3. Elevation distribution of 21 historical and 10 recent CRLF localities in the Sierra Nevada of California (Barry and Fellers 2013).

Barry and Fellers (2013) found that 17 of 21 (81%) historical Sierra Nevada and Cascades CRLF localities included in their dataset are from 240 – 1,100 m (787 - 3,609 ft.) elevation, with 14 of the 17 (82%) below 800 m (2,625 ft.) (Fig. 3). Only the potentially introduced CRLF populations at Birch Lake and the Swamp Lake-Miguel Meadow-Gravel Pit Lake region of Yosemite National Park were from significantly higher elevations (1,300 – 1,550 m or 4,265 - 5,085 ft.), and these populations are now extirpated (Fig. 3). This analysis assumes an upper elevational range of 4,000 ft. elevation for the

species based on recent, extant CRLF localities (Barry and Fellers 2013). This data also suggests that the Sunny South project is at the upper elevational range for the CRLF.

Acreages presented in this section of the document include proposed treatments below 4,000 feet in elevation. Table 7 below summarizes the total acres of riparian conservation area (RCA) habitat for the CRLF within the Sunny South Project area. The treatable column represents the amount of RCA habitat without the riparian buffer included and on slopes less than 20%. Management Requirements (MMR's) establish a 100-foot "riparian buffer" zone along each side of perennial streams and special aquatic features, 50-foot "riparian buffer" along each side of intermittent streams and establish a 25-foot "riparian buffer" zone along each side of ephemeral streams. No harvest or ground based equipment is allowed in riparian buffers unless otherwise agreed upon with a riparian specialist.

Table 7. Total amount of RCA and Riparian Buffer habitat by acres for suitable CRLF habitat.

Sunny South Project	RCA (acres)		Riparian Buffer (acres)	Total RCA Acres
	Potentially Suitable CRLF Habitat		Potentially Suitable CRLF Habitat	
	Treatable <20% slope	Total		
Project Boundary	472.55	1,122.55	628.82	1,751
CRLF Potentially Suitable Habitat	246.96	526.48	295.83	822

B. Effects of the Proposed Action

The analysis area for California red-legged frog (CRLF) is defined spatially as the area (37,372 acres) within 2 miles of proposed project activities at or below 4,000 feet elevation in correlation with the dispersal range described in the Recovery Plan (USFWS 2002) and the elevation range for this species (Fig. 4). Two miles is the maximum distance from water CRLF are known to travel. The analysis area is defined temporally to extend 20 years before and after the present in correlation with the estimated longevity of vegetation treatments.

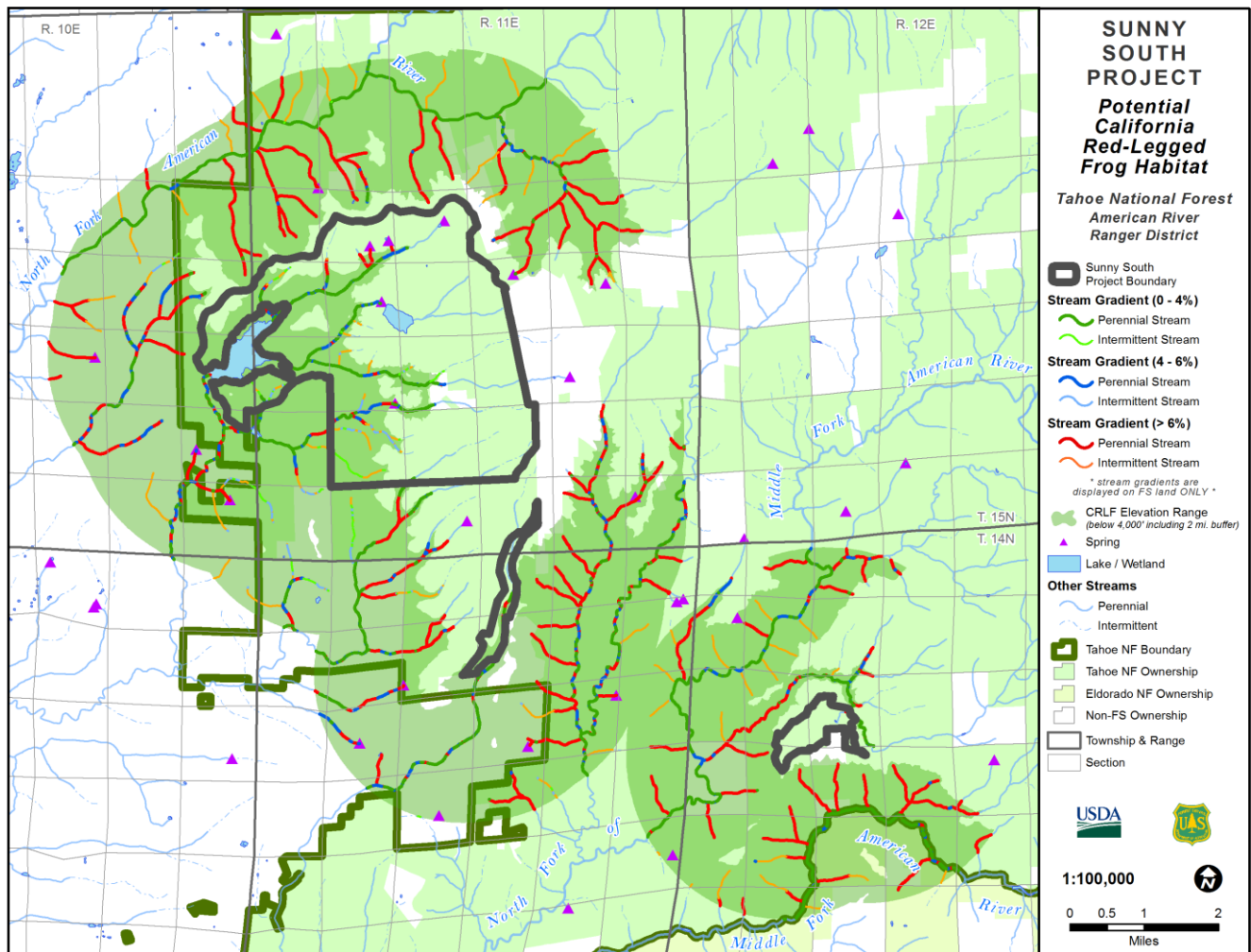


Figure 4. California red-legged frog analysis area and potential suitable habitat.

Attributes of Concern

Sediment: Ground-disturbing activities proposed for the Sunny South Project have the potential for producing fine sediment which could wash into stream channels. Increases in fine sediment are considered, to varying degrees, to have potential for detrimental effects upon aquatic species. Fine sediment can potentially smother CRLF frog egg masses, and increased water turbidity could restrict respiration for tadpoles in off-channel habitat. A study by Gillespie (2002) found that increased sediment loads in streams negatively impacted growth and development of spotted tree frog (*Litoria spenceri*) tadpoles, and could delay the amount of time required for tadpoles to metamorphose into frogs. Increases in fine sediment can also impact aquatic macroinvertebrate diversity and abundance, thus altering food availability for CRLF frogs (Soroka and McKenzie-Grieve, 1983; Ryder, 1989; Ryan, 1991). The effect of sediment deposition on CRLF frog adults, which typically inhabit perennial stream and spring channels, is unclear.

However, as findings from the Gillespie (2002) study indicate, egg masses and tadpoles may be affected by sediment. When adjacent stream channels flood and become hydrologically connected to these off-channel habitats, there is a risk of increased sedimentation of areas such as breeding ponds. As the Gillespie (2002) study indicates, tadpole growth and development could be negatively affected.

Water/Air Temperature: Stream channel shade is considered highly influential in regulating water temperature (Rutherford et al, 2004). Water temperature affects dissolved oxygen, respiration and development rates, and algae development for aquatic species. Typically, buffer zones are placed along stream channel corridors that prohibit vegetation management activities near streams. One of the primary objectives of these riparian buffers is to retain stream channel canopy cover. Many studies have analyzed the effects of implementing buffer zones of variable widths on stream temperatures, and the effects of vegetation management activities adjacent to stream channels (Brazier and Brown, 1973; Broadmeadow and Nisbet, 2004; Clinton et al., 2010; Macdonald et al., 2003; Moore et al., 2005). In general, these studies either found no significant change in stream temperatures following vegetation management within RCAs (Clinton et al., 2010), or found significantly elevated water temperatures following project activities (Brazier and Brown, 1973; Macdonald et al., 2003). The latter studies (Brazier and Brown, MacDonald et al.) found increased water temperatures only in study reaches where live conifers were clear-cut for 300-800 meters along the stream, only leaving riparian vegetation along the stream banks.

The vast majority of stream channel shade in the Sunny South Project area is provided by adjacent vegetation. Vegetation removal near stream channels would reduce shade cover and could lead to increased water temperatures as a result of increased sunlight exposure. Trees located within 100 feet of stream channels are considered to be more influential in providing stream channel shade than trees located beyond 100 feet (FEMAT, 1993). Therefore, analysis is focused upon vegetation management activities within 100 feet of stream channels when assessing effects upon stream channel shade.

Chemical Contaminants: A borate compound (borax) is often used as a fungicide for the prevention of annosus root disease. The compound is applied to cut stumps of live conifers at a rate of one pound of borate compound per fifty square feet of cut stump surface. Borate is partially soluble in water. The use of borate compound is being proposed to treat cut stumps of live trees within area salvage and danger tree removal units. Thus, the toxicity of borax on aquatic organisms could be a concern.

A Pesticide Fact Sheet prepared for the Forest Service by Information Ventures, Inc. (2003), found that borax toxicity towards fish and aquatic macroinvertebrates is very low. The LC-50 (the concentration of substance in water which results in the death of fifty percent of a given organism) of borax for fish was found to exceed 1,000 parts per million (ppm). Aquatic water fleas (*Daphnia* sp.) exhibited a LC-50 of 133-226 ppm. The aforementioned values are acute, and not chronic, values of toxicity, as borax has not been shown to bioaccumulate in aquatic organisms (Information Ventures, Inc., 2003). When categorizing the toxicity of borax towards aquatic organisms, it was determined that borax falls under the Toxicity Category of 'practically non-toxic' (Information Ventures, Inc., 2003).

There are few studies on the effects of borax on amphibians. An Ecological Risk Assessment prepared for the USFS by Syracuse Environmental Research Associates (SERA), Inc. (2006) references a study using larval leopard frogs (*Lithobates pipiens*). The study found a LC-50 of approximately 47 ppm for leopard frog tadpoles exposed to borax for 7.5 days. Researchers in the aforementioned study concluded that borax toxicity is relatively low for leopard frogs.

Direct and Indirect Effects

There would be a negligible risk of direct effects upon the CRLF, or their habitat, resulting from activities proposed. There are four potential scenarios in which the CRLF could be directly affected by project activities. These scenarios include 1) frogs coming into direct contact with mechanical equipment, 2) tree felling upon individual frogs, 3) exposure and subsequent sickening of frogs from borate compound used to treat live cut stumps of conifers, and 4) tadpoles and/or egg masses coming into contact with water drafting equipment. However, none of these scenarios is expected to occur under

the proposed action due to the proposed project design standards developed to minimize effects to aquatic habitat.

During dry periods, the California red-legged frog rarely is encountered far from water (USFWS 2002). When soil conditions become dry, individual frog movement is typically restricted to stream courses and/or wetlands. During periods of wet weather, starting with the first rains in the fall, some individuals may make overland excursions through upland habitats (USFWS 2002). No mechanical equipment is permitted within 100 feet of perennial streams or wet meadows in the riparian buffer inside the subwatersheds considered to have potentially suitable habitat for CRLF. Additionally, no mechanical operations will occur within 300 feet of suitable habitat for California red-legged frog (e.g. intermittent or perennial streams, ponds, springs, and seeps) during the wet season (defined as starting with the first frontal rain system that deposits a minimum of 0.25 inches of rain after October 15 and ending April 15). Limited operating periods (LOP's) would minimize the potential for direct effects to migrating CRLF adults, which can move long distances (200 to 2,800 meters or 0.12 to 1.7 miles) between aquatic sites. In addition, the Sunny South Project would not be implemented until soils were considered dry enough for project activities (TNF Wet Weather Operation Guidelines).

Past research focused primarily on CRLF in mesic environments, specifically along the coast of California in San Luis Obispo County (Rathbun et al. 1993; Rathbun et al. 1997), Santa Cruz County (Bulger et al. 2003) and Marin County (Fellers and Kleeman 2007). In a more xeric inland environment (still influenced by coastal climate) in Contra Costa County, observations found that average terrestrial distances were larger during the pre-breeding season (41.8 m) than in the breeding season (13.5 m) or postbreeding season (16.3 m), with greater distances travelled in the second year (Tatarian 2008). The average terrestrial distance moved was 24.38 meters \pm 20.74; range 1-71 m) and the average aquatic distance moved was 107.2 meters \pm 152.08 (range 11-661.4 m).

A study conducted between 2004 and 2007, in the foothills of the Sierra Nevada Mountains in Butte County (2,520 ft. elevation) on the Plumas National Forest, with much more xeric conditions than either the coastal study or the inland environments in Contra Costa County (Tartarian and Tartarian 2008, unpublished report). They found that the Sierran foothill individuals rarely moved away from the pond during the breeding season, and only moved up to a maximum of 20 meters. In years when the pond retained water, no frogs moved away from the pond. Only when the pond dried up, did frogs move downstream to a seep area. As observed in other CRLF populations, the Sierra foothill study observed movements from the pond during periods of rain (Tatarian 2008, Bulger et al. 2003). For the four years combined, 6 individuals with radio-tags were observed making 8 aquatic movements; all of the frogs were presumed to have moved between the pond and the seep when the pond dried. No significant terrestrial forays (movements onto land greater than 6 meters) were observed during this study at either the pond or the seep.

The Sunny South Project has conditions that are more similar to xeric environments, such as CRLF populations found at the Sierra Nevada foothill location on the Plumas NF in Butte Co. Since project activities would not occur during wet soil conditions when CRLF are most likely to be traveling overland, the risk of mechanical equipment coming into contact with individual frogs would be so low as to be insignificant to nonexistent because frogs are highly aquatic during the breeding season and are not expected to move into upland habitat at the time of project implementation. Additionally, site assessments conducted in the project area resulted in finding no suitable CRLF breeding habitat (Appendix B).

The use of borate compound (otherwise known as borax) is proposed for cut stumps of live conifers greater than 14 inches diameter within hazard tree and area salvage treatment units (See Sunny South Management Requirements). Although no research has been conducted to assess the effects of borax upon CRLF, a study using larval leopard frogs (*Rana pipiens*) found borax toxicity is relatively low

(SERA, 2006). Studies of borax toxicity upon other aquatic organisms deemed borax to be “practically non-toxic” (Information Ventures, Inc., 2003). Although borax toxicity is considered to be low, mitigations would still be in place to prevent borax from entering watercourses and potentially affecting aquatic habitats. Application of borate compound in the Sunny South Project will limit direct application to stumps within 25 feet of perennial or intermittent streams, meadows, and special aquatic features. Application of borax will also cease if there is sustained rainfall to avoid misapplication and runoff. Given the low toxicity of borax and planned mitigation measures, the application of borate compound to live cut stumps within the project area would have a negligible risk of affecting CRLF or their potentially suitable habitat.

The primary risk with water drafting comes from young of the year fish, egg masses and/or tadpoles coming into contact with equipment used to suction water from the stream/watering hole. Although screens are placed on the ends of water intake hoses to aid in preventing suction of aquatic species, egg masses and tadpoles may be smaller than the mesh size present on the screens. To ensure that no egg masses or tadpoles are affected by water drafting operations, a fishery biologist from the American River Ranger District will visit all potential water drafting sites to conduct visual presence-absence surveys for amphibian egg masses and tadpoles prior to operations. Fish stranding also becomes a concern with regard to water drafting operations. Drafting rates and volumes are important to CRLF, young of the year fry and adult salmonids survival as stranding can occur in channel habitats leading to mortality. A flow meter (HACH FH950) will be used to measure streamflow before drafting operations occur. No water drafting will occur if egg masses or tadpoles are observed in a given water drafting site.

Summary of Direct Effects

In summary, because of the low likelihood of CRLF occurring in the project area, because most activities are outside of streamside buffers, because frog movement during the dry allowable activity period is limited, and because implementation of the Sunny South Project coupled with management requirements and standards and guidelines the project would have only a negligible risk of directly affecting CRLF through contact with mechanical equipment or felling of trees, and a negligible risk of poisoning by the use of borate compound or coming into contact with water drafting equipment.

Indirect Effects

The two risks associated with project activities which may indirectly affect CRLF or their potentially suitable habitat include 1) increased sedimentation of potentially suitable habitat as a result of ground disturbance, and 2) reductions in canopy cover within potentially suitable habitat as a result of tree felling within RCAs, which could lead to increased water temperatures. It has been determined that activities proposed under the proposed actions would have a negligible to low risk of sedimentation of stream channel and off-channel habitat, and a negligible risk to changes in canopy cover.

Although this analysis of effects is focused upon treatments within RCAs that are hydrologically linked to potentially suitable habitats, proposed vegetation management activities outside of RCAs have the potential for exposing bare mineral soil and destabilizing hill slopes. These effects can, in turn, result in increased sedimentation of stream channels located downhill from upland treatments. Descriptions of RCA-specific management requirements can be found in the Management Requirements section of this document. In general, RCA-specific management requirements were designed to minimize ground-disturbing actions within RCAs while meeting project objectives.

Effects of Sediment: Ground-disturbing activities within RCAs are the most likely actions to produce sediment which could enter perennial waters and thus affect CRLF, or their potentially suitable habitat. Project activities taking place in upland (non-RCA) habitat may also contribute sediment to perennial waters.

Known occupied CRLF habitat does not exist within 2 miles of, and would not be affected by, the project; however, project activities are proposed in suitable CRLF habitat at water drafting sites and within 300 feet of suitable habitat, including Riparian Conservation Areas (RCAs). Implementation would follow management requirements described in the Sunny South Project RCA Guidelines and be consistent with Riparian Conservation Objectives (RCOs) and Aquatic Management Strategy (AMS) goals (USDA 2004) and the Land and Resource Management Plan for the Tahoe National Forest, as amended (USDA 2004). The intent of management direction for RCAs is to (1) minimize impacts, enhance, and restore habitat for riparian- and aquatic-dependent species; (2) ensure that water quality is maintained or restored; (3) enhance habitat conservation for species associated with the transition zone between upslope and riparian areas; and (4) provide greater connectivity within the watershed.

Additionally, no mechanical operations will occur within 300 feet of suitable habitat for California red-legged frog (e.g. intermittent or perennial streams, ponds, springs, and seeps) during the wet season (defined as starting with the first frontal rain system that deposits a minimum of 0.25 inches of rain after October 15 and ending April 15). Limited operating periods (LOP's) will minimize the potential for direct effects to migrating CRLF adults as they can move long distances (200 to 2,800 meters) between aquatic sites.

Actions proposed within RCAs that are most likely to affect stream channels and off-channel habitat include vegetation management activities within RCAs of stream channels and wet meadows. In general, treatments within RCAs are more restricted than actions proposed in upland (non-RCA) areas. Site-specific management requirements and BMPs are utilized within RCAs to minimize potential impacts to aquatic habitats. Refer to the Management Requirements section in this document for relevant management requirements to proposed RCA treatments.

Ground-disturbing changes in the transportation system (e.g. opening temporary roads) would not occur within 300 feet of suitable habitat for California red-legged frog (e.g. in intermittent or perennial streams, ponds, springs, and seeps at or below 4,000 feet elevation). Additionally, riparian buffer zones along each side of streams (100 feet for perennial, 50 feet for intermittent and 25 feet for ephemeral streams) would provide shade and coarse woody debris to stream channels and riparian areas, reducing the risk of sediment entering or moving through the stream channels. Up to 129 acres of vegetation treatments, equivalent to approximately 16 percent of the suitable habitat (129 acres of 822 acres), may occur under the proposed action (Table 8).

Table 8. Potential vegetation treatments within 300 feet of CRLF suitable habitat.

Treatment Type	Treatment	Residual Fuels	Treatment Areas	Acres
Ground-based Thin (Mechanical)	Thin 10-30" dbh to 40-50% canopy closure	Machine pile, pile burn, and prescribed burn; mastication or prescribed burn; or prescribed burn	SP-1, 3, 4, 5, 7, 8, 11, 12, 13, 15, 16, 18, 19, 26, 27, 28	104
Pre-commercial Thin	Thin under 10" dbh	Hand thin with lop and scatter		
Cable Thin (Mechanical)	Thin 10-30" dbh to 40-50% canopy closure	Lop and scatter and burn; or hand pile and pile burn	S-1	18
Prescribed Burn	Hand thin <6" dbh and underburn	Prescribed burn	SP-14	7
Total Acres Treated				129

Vegetation treatments may reduce tree and shrub cover on up to 129 acres within 100-300 feet of perennial streams and 50-300 feet of intermittent streams, making these areas slightly warmer, drier, and

less suitable for California red-legged frog dispersal, until new growth offsets and replaces lost cover over the 20-years following implementation. Cover immediately adjacent to non-breeding habitat would be reduced to a lesser extent given implementation of riparian buffers (25/50/100 feet). Since hand treatments produce negligible ground disturbance, these actions would not contribute sediment to adjacent stream channels. In addition, hand treatments within RCAs would include lopping and scattering, which would provide more ground cover than is currently present to minimize sediment transport. Temporary roads necessary to implement thinning activities would not be constructed in RCAs and, therefore, would not affect CRLF non-breeding habitat.

Pile burning and underburning would follow Sunny South Project RCA guidelines (e.g. no burn piles permitted within 100 feet of perennial water sources; USDA 2013b). Pile burning would result in patchy increases in soil hydrophobicity and potential nutrient transport within RCAs in the short term but, because of spatial buffers between piles and aquatic habitats, is not expected to affect non-breeding habitat (e.g. water quality would not be reduced). Prescribed burning is not expected to affect suitable habitat with the exception of where fire backs into riparian zones, which is expected to be slightly detrimental to habitat in the short term, causing a reduction of ground vegetation in riparian areas, and beneficial in the long term, allowing emergent vegetation to replace decadent woody vegetation. Approximately 300 acres of prescribed fire occurs on a yearly basis within the 235,700 acre American River Ranger District. Of the 300 acres of underburning that occurs each year a small percentage will effect riparian vegetation. Due to the small number of acres of suitable habitat that will be effected each year and the quick regrowth following underburning, prescribed fire is expected to have a slightly detrimental short term effect, and a beneficial long term effect.

Hazard tree removal is expected to be sporadic across the landscape, near existing roads and facilities, rather than relatively continuous like a thinning treatment. Hazard tree removal would only occur incidentally within suitable habitat and therefore would not affect overall habitat quality and quantity. As such, hazard tree removal is expected to have a negligible to very slight effect on non-breeding habitat.

Masticated, chipped (removed for biomass or spread on site), or lopped and scattered materials are expected to have a negligible effect on suitable non-breeding habitat. Fuel reductions associated with thinning and follow-up treatments (e.g. chipping, mastication, and pile burning) are expected to reduce the potential for severe wildland fire effects to unoccupied, suitable non-breeding habitats in and adjacent to the project area for an estimated 20 years, with the greatest reduction in potential effects in the first few years following treatment (prior to re-growth of ladder fuels in the understory).

Outside of RCAs, a combination of mechanical and hand treatments would occur. Since hand treatments produce very little ground disturbance, emphasis of analysis in upland (non-RCA) areas is focused on the use of ground-based mechanical equipment.

The type of equipment being used is another consideration when assessing potential ground disturbance by mechanical equipment operation. Mastication treatments produce large amounts of groundcover as they break down brush and small trees, often leaving more groundcover after treatment than was present prior to treatment. One would expect very little soil erosion resulting from mastication.

Indirect effects are not expected as a result of water drafting operations. Drafting sites shall be located to minimize sediment input and maintain riparian resources, channel condition and CRLF habitat. Appropriate drafting rates will also ensure that stream temperatures remain suitable. Water drafting vehicles shall also contain petroleum spill kits to ensure contaminants do not enter the waterways.

In summary, project activities would have a negligible to low risk of sedimentation to suitable habitat for CRLF.

Effects to Shade/Water Temperature: Reductions in stream channel canopy cover can potentially lead to increased water temperatures, particularly in the mid- to late-summer months when temperatures are high and water levels begin to recede as snowmelt declines. With approximately 129 acres of treatments proposed within RCAs suitable for CRLF, a reduction in canopy cover becomes a concern. However implementation of the Sunny South Project is expected to have a negligible effect upon water temperatures in project-area subwatersheds because of the riparian conservation area (RCA) guidelines and project specific management requirements.

Reductions in canopy cover over seasonal stream channels would essentially have no effect on water temperature, as these channels are usually devoid of water by mid-summer. Therefore, emphasis of analysis is placed upon RCAs with perennial waters. In addition, only the inner 100 feet of perennial RCA treatments are analyzed for stream channel canopy cover, as trees within this area are more influential in providing canopy cover than trees outside of this range (Forest Ecosystem Management Assessment Team, FEMAT, 1993). The FEMAT assessment describes trees within 100 feet of stream channels as being more influential in providing canopy cover than trees outside that range. Depending on topography, trees between 100-150 feet beyond the stream channel may have influence upon stream channel shading (i.e., steep hill slopes would result in trees further away from stream channels providing more shade over the channel, versus trees located on flat terrain adjacent to a stream channel). Retained trees will provide shade, retention of water and moisture on site, soil and bank stability, and have a positive effect on the micro-climate within the RCA's specifically within the riparian buffer. With implementation of the project management requirements and BMPs discussed above, there would be nominal indirect effects to the CRLF and its potential habitat within the Sunny South Project by the proposed actions.

As described in the Proposed Action for the Sunny South Project, only sporadic dead and dying trees would be felled under the hazard tree removal prescription within perennial riparian buffers. Therefore, the felling of hazard trees within perennial stream riparian buffers of the Sunny South Project area may have a negligible, localized effect upon stream channel canopy cover, and thus would be unlikely to change water temperatures within potentially suitable habitat for CRLF.

In summary, known occupied CRLF habitat would not be affected because none exists within the analysis area and suitable CRLF habitat would remain suitable (i.e. water quality and riparian habitat would be improved and minimum in-stream flows would be maintained). An estimated 129 acres within 300 feet of suitable CRLF habitat distributed across the project area and below 4,000 feet elevation may be affected by the Sunny South Project. Tree and shrub thinning would result in slightly warmer and drier conditions between 100-300 feet of perennial streams and 50-150 feet of intermittent streams and slightly reduce habitat suitability for CRLF dispersal in these areas primarily over the short term. Underburning fires that back into riparian areas would be slightly detrimental to habitat suitability over the short term, but slightly beneficial over the long term. The potential risk of adverse effects from a high severity wildland fire would be reduced, especially in the short term.

Direct and indirect effects from the proposed action would not occur to California red-legged frog designated critical habitat because the project is located approximately 1.3 miles south of the project boundary and does not have the potential to affect, designated critical habitat (PLA-1). Indirect effects to suitable habitat occurring within the analysis area may occur in the short term as a result of prescribed fire slightly reducing ground cover in suitable habitats.

Summary of Indirect Effects

In summary, implementation of the proposed action for the Sunny South Project would pose a negligible to low risk of indirect effects upon CRLF individuals, or their potentially suitable habitat. Limited

ground-based mechanical treatments would occur within RCAs of subwatersheds considered to have potentially suitable habitat for CRLF. Management requirements would be implemented within upland (non-RCA) ground-based mechanical equipment units that would minimize sediment production and transport to adjacent stream channels. Since very little ground disturbance would occur within RCAs, these RCAs would also act as buffers to aid in filtering out any sediment that is potentially produced in upland treatment areas before it could reach stream channels. The felling of hazard trees would have a negligible impact upon water temperatures within perennial and seasonal streams, as only 16 percent of the total available RCA habitat would be treated.

Cumulative Effects

As described in the direct and indirect effects sections above, the most likely effects to CRLF habitat are related to reduced canopy cover effecting water temperature and potential increased sediment to suitable habitat for CRLF.

Under the Endangered Species Act (50 CFR 402.02), cumulative effects are “those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.” The cumulative effects analysis area for California red-legged frog is defined spatially as the area (37,372 acres) within 2 miles of proposed project activities at or below 4,000 feet elevation in correlation with the dispersal range given in the Recovery Plan (USFWS 2002) and the elevation range for this species (fig. 3). The analysis area is defined temporally to extend 20 years before and after the present in correlation with the estimated longevity of vegetation treatments.

Private land development and human activities on private land, including vegetation management, has the potential to reduce the quantity and quality of riparian areas. It is not known the degree to which activities on private land may have altered riparian habitats for this species. Rivers and streams in the Sunny South Project include Pagge Creek, Forbes Creek, Shirttail Creek and their tributaries which total 10.21 miles of perennial stream and 4.92 miles of seasonal stream. In addition there are nearly 188 acres of wetland and lake habitat and 1 spring. California red-legged frogs have not been detected and are not known to occur in these intermittent and perennial streams and wetlands inside the Sunny South project area. Outside of the project boundary but within 2 miles of the proposed action there are approximately 24 miles of seasonal stream channel and 111 miles of perennial stream miles. Of the 24 miles of seasonal stream 86% were greater than 6 percent gradient. Of the 111 miles of perennial streams 61 percent were greater than 6 percent gradient. This data reveals that the majority of the stream miles within the 2 mile buffer are not suitable for CRLF breeding habitat.

Past actions

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a catalog and analysis of all past actions would be impractical to compile and unduly costly to obtain. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions risks ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or events contributed to those effects.

Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions within the analysis area include Foresthill Public Utility District (FPUD) proposed expansion of Sugar Pine Reservoir storage capacity from approximately 7,000 acre-feet to 10,658 Acre-feet. Sugar Pine Dam is located on North Shirttail Creek approximately 9 miles north, and up gradient, from Foresthill, California. The watershed above the dam encompasses approximately 9.5 square miles, with the highest points ranging up to an elevation of approximately 4,800 feet above sea level. The dam is 205 feet tall with a crest that is 689 feet long and 40 feet wide at an elevation of approximately 3,650 feet above sea level.

Sugar Pine Reservoir has an existing storage capacity of 6,922 acre-feet (AF). The dam's concrete spillway inlet structure is constructed with a 3-foot-wide center pier designed to accommodate future installation of 2 radial gates. The gates would raise the reservoir by approximately 20 feet, creating 3,658 AF of additional storage capacity, for a total storage capacity of 10,658 AF. An 8-mile-long pipeline constructed of ductile iron (24") and steel (27") conveys water down gradient from Sugar Pine Reservoir to a 40 AF regulating reservoir at a water treatment plant, from which potable water is delivered down gradient for beneficial use in the District's service area.

Completion of the Project facilities would involve installation of two radial gates in the existing concrete spillway constructed at Sugar Pine Dam, as described above. The installation would include two painted steel radial gates 20' wide x 32' high (20' design head) complete with side and bottom seals, stainless steel side rubbing plates, steel sill beam with stainless steel sealing faces (note all sealing faces are machined), trunnion, arms/brackets/pins/bearings, and concrete anchors. To operate the gates, a hoist would employ a wire rope system with stainless steel cables (1 per side of gate), machine grooved drums, drum support bearings, cross shaft, couplers, main gear box, electric motor and brake. The hoist comes fully assembled on a painted steel hoist bridge (fully machined surfaces).

Shoreline modifications to accommodate the expanded inundation pool would include development and implementation of a Timber Harvest Plan and potential modifications to existing recreational infrastructure owned and operated by the U.S. Forest Service that would be affected by the 20-foot increase in the depth of the reservoir. ECORP Consulting, Inc. (ECORP) has been retained by Foresthill Public Utility District (FPUD) to prepare a project-level joint EIR/EIS for the Petition for Extension of Time to complete construction in full compliance with CEQA and NEPA and taking into account recent case law. In addition, ECORP will prepare biological and cultural resources technical studies to support the EIR/EIS impact evaluations.

Foresthill Public Utility District's proposed action is projected to inundate 950 feet of stream habitat on Shirttail Creek and 956 feet of stream habitat on Forbes Creek. This action would negatively affect the CRLF by losing potential dispersal stream habitat. Sugar Pine Reservoir is occupied by non-native centrarchids and the proposed action would expand suitable habitat for species like largemouth bass. Visual encounter surveys were conducted by biologists contracted for this project; these surveys did not detect CRLF. Although the Sugar Pine Reservoir project is in the same area as the Sunny South project, neither this, nor any other project is known to be an interrelated or interdependent action.

Other actions within the Sunny South project area have occurred on private lands. However based on information at the Cal Fire Timber Harvest Plan (THP) database ftp site (<ftp://ftp.fire.ca.gov/forest/>), no activities from State or private overlapped with the analysis area for the Sunny South project.

In addition present and reasonably foreseeable future actions occurring within the Analysis Area includes the Biggie and Cuckoo Fuel Reduction and Vegetation Management Projects, which overlaps the analysis area near Big Oak Flat. The Cuckoo treatment areas are preliminary and still in the planning phase, the Biggie treatment areas are closer to being finalized. The general effects of the Biggie

and Cuckoo project are expected to result in various degrees of short-term habitat change, but overall project design standards were to maintain suitable habitat for aquatic species at the stand or landscape scale. There would be a low risk of proposed actions measurably changing existing conditions within project-area streams. As previously stated, the risk of sedimentation resulting from project activities is considered negligible to low. When added to existing conditions within the project area, there would be a negligible to low risk of further reducing habitat quality within the project area. Implementation of Best Management Requirements (BMP's) and Management Requirements (MMR's) would minimize the risk of sediment entering stream channels and depositing within perennial stream substrates, or becoming suspended and entering potential off-channel breeding habitats for CRLF. The vast majority of treatments within riparian buffers would be conducted by hand, and these treatments would result in minimal ground disturbance.

The analysis area also includes the Foresthill Seed Orchard, located alongside the Foresthill Divide Road, and consists of approximately 430 acres. The Seed Orchard is intensively managed for particular conifer genetics and the resulting cone crops. This area receives ongoing management, including understory vegetation control, planting, fertilization, weeding, pruning, pre-commercial and commercial thinning, even-aged harvest, chipping, gopher and insect control, pile burning, and low-intensity understory burning.

Other projects in the analysis area include the recent Deadwood Vegetation Management and Fuels Reduction Project, which was about 4,000 acres, including commercial and precommercial thinning, fuels reduction, fuelbreaks, prescribed burning, and roadwork; the Oliver Insect Salvage project, Bear Wallow Thinning project, Big Reservoir project, End of the World project, Giant project, Iowa Hill Shaded Fuelbreak, and the Shirttail Succor Oak Fuel Reduction project. Most of these projects included a combination of commercial and precommercial thinning fuels reduction, and prescribed burning. The Sugar Pine Reservoir area receives heavy recreational use and small maintenance and improvement projects associated with the established campgrounds, OHV trails, and the reservoir, which provides residential water for the community of Foresthill.

It is likely that other projects will occur within the Analysis Area within the next 20 years but they have not yet been developed and therefore cannot be quantified.

Summary of Effects

There are no records of California red-legged frogs ever having been within the Sunny South project area. If CRLF had existed in the project area in the past, effects from proposed action would not have eliminated their presence. A combination of factors such as collecting frogs for food or as pets, high streamflow events, lack of connectivity between pond habitat in the watershed, and lack of suitable pond habitat within the project area are more likely to have restricted their existence in the area.

After numerous site assessments in the area, no potential CRLF breeding habitat was observed. In the event that habitat becomes occupied by California red-legged frogs, with application of the proposed management requirements it is unlikely that CRLF would be adversely affected by the proposed action. SNFPA (USDA 2004) and California Red-legged Frog Recovery Plan (USDI 2002) guidance shall be followed. The Michigan Bluff CRLF population is outside of the project area and is located approximately 2.0 miles south of the Sunny South project, in a separate watershed. At these distances it is not likely that CRLF would have connectivity between suitable habitat within the project area and these occupied ponds.

Future Federal actions that are unrelated (*i.e.*, not interrelated or interdependent) to the proposed action are not considered in this analysis because they will be subject to separate consultation with USFWS

pursuant to section 7 of the Endangered Species Act. Overall, the limited potential for impacts associated with the actions proposed on private land is not expected to result in substantial effect to CRLF or their habitat, and is not expected to substantially contribute to any cumulative effects.

Reasonably foreseeable future actions within the analysis area will not affect or not expected to affect designated critical habitat for this species; therefore, adverse cumulative effects will not result from the proposed action to designated critical habitat for the California red-legged frog.

Implementation of site-specific and project-wide management requirements associated with the Sunny South Project would result in a negligible risk for effects towards CRLF individuals or suitable habitat located within and downstream of the project area. When combined with effects resulting from ongoing and reasonably foreseeable actions on non-federal lands within the subwatersheds encompassing the project area, implementation of activities included in the Sunny South Project would have a negligible risk for additional, incremental negative indirect effects to CRLF habitat within and downstream of the project area.

C. Conclusion and Determinations

- a. It is my determination that the Sunny South Project will not affect designated critical habitat for the California red-legged frog.

Rationale: Direct, indirect, and cumulative effects will not occur to designated critical habitat (PLA-1) for the California red-legged frog because none exists within the project area.

- b. It is my determination that the Sunny South Project **may affect but is not likely to adversely affect** the California red-legged frog.

Rationale: Direct effects are not expected to occur in the analysis area because riparian buffers and management requirements for the California red-legged frog would be followed. Indirect effects may occur to non-breeding habitat and would temporarily reduce the quality of small amounts of suitable habitat.

The following factors led to my determination of effects of the proposed action on the California red-legged frog:

1. There would be a **negligible risk of direct effects** upon CRLF due to the following:
 - a. Project implementation would not occur when CRLF individuals are most likely to move away from perennial water sources (Limited Operating Period).
 - b. The relatively low toxicity of borate compound upon amphibians. Application of borate compound in the Sunny South Project will insure for direct application to stumps within 25 feet of perennial or intermittent streams, meadows, and special aquatic features. Application of borax will also be ceased if there is sustained rainfall, to avoid misapplication and runoff.
 - c. Water drafting sites would be surveyed by ARRD fisheries biologists prior to use to determine presence/absence of CRLF egg masses or tadpoles. If detected, these sites would not be used for water drafting.
 - d. The Michigan Bluff population is outside of the project area and is located approximately 2 miles south of the Sunny South Project, in a separate watershed. The proposed project has no potential to affect designated critical habitat.

2. There would be a **negligible to low risk of indirect effects** upon CRLF, or their potentially suitable habitat, due to the following:
 - a. Implementation of Soil Quality Standards and appropriate BMPs would minimize the risk of soil erosion within upland (non-RCA) treatment units.
 - b. The restriction of ground-based mechanical equipment from the riparian buffer would provide a buffer between upland treatment units and potentially suitable habitat for CRLF.

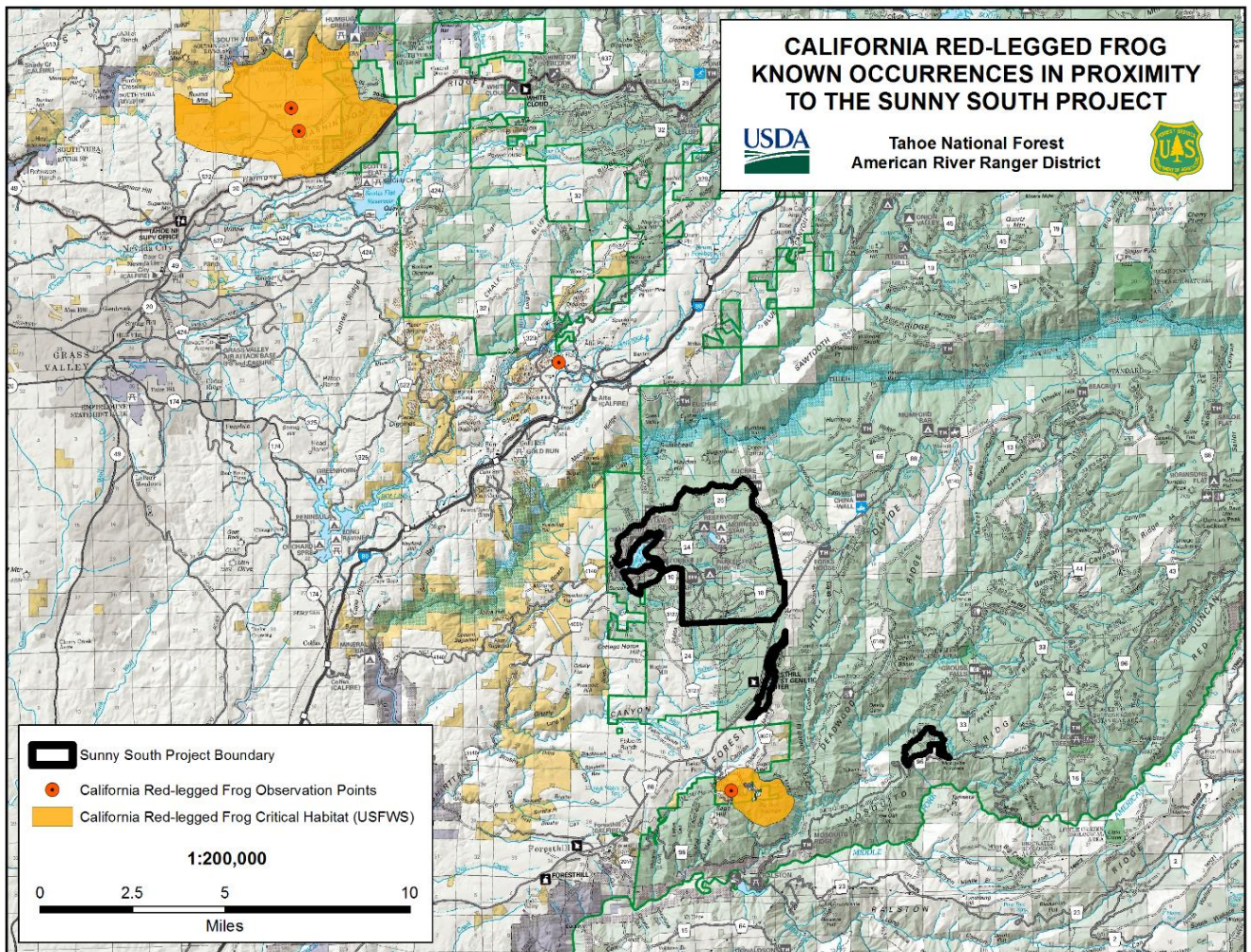


Figure 5. California Red-legged Frog Known Occurrences in Proximity to the Sunny South Project

Layne's butterweed (*Packera laynae*)

A. Existing Environment

Species Account

Layne's butterweed (formerly *Senecio laynae*) is a small perennial serpentine / gabbro endemic forb. It is restricted to the foothills of El Dorado, Tuolumne, and Yuba Counties (Jepson 2010b and USFWS 2002a). There are approximately 48 occurrences across the species range (California Department of Fish

and Wildlife 2016). There is two known occurrence on Tahoe National Forest, both in Placer County on the American River Ranger District. One is located just west of Sage Hill (south of Foresthill) and the other is located along Forbes Creek, near Sugar Pine Reservoir (in project area). Based on 5+ years of census information at the Sage Hill occurrence (formal monitoring plots have not been established for this occurrence), the trend on TNF appears to be relatively stable.

Habitat Status

Layne's butterweed appears to be an early successional species that occupies temporary openings on gabbro (i.e. rich in iron and magnesium with low concentrations of heavy metals) or serpentine soils (i.e. derived from ultra-mafic parent material) (US Fish and Wildlife Service 2002). Layne's butterweed densities are significantly higher in areas with more exposed bare ground (Merriam 2009). On TNF, its habitat is likely restricted to the following USGS soil types: DUE and DUF (Dubakella-Dubakella variant-rock outcrop complexes); ISE, ISE5, and ISF (Forbes-Dubakella complexes); and RDE and RDG (rock outcrop- Dubakella-Dubakella variant complexes). Dubakella soils have thin surface layers, are moderately deep, have a high amount of rock fragments, and have low subsoil strength when wet. Forbes-Dubakella soils are similar to Dubakella soils with loamy textures: rock outcrop-Dubakella soils are also similar to Dubakella soils and have a thick, dark surface layer ((USDA Forest Service 2015a). Critical habitat has not been designated for this species and TNF is located outside preserve system identified by the USFWS for the recovery plan (US Fish and Wildlife Service 2002).

Threats / Management Concerns

Layne's butterweed has been listed as federally threatened since 1996. It is considered rare and moderately threatened in California (CRPR 1B.2) and is globally threatened (G2)(California Native Plant Society 2012; NatureServe 2015). Recovery objectives for the species are outlined in the 2002 Recovery Plan for Gabbro Soil Plants of the Central Sierra Nevada Foothills (US Fish and Wildlife Service 2002). Habitat destruction is listed as the primary cause of species endangerment for Layne's butterweed (US Fish and Wildlife Service 2002). Other threats to Layne's butterweed associated with forest management include: clearing of chaparral; competition from invasive vegetation; shading from native tree and shrub species; mining claims; overgrazing by horses (US Fish and Wildlife Service 2002).

Extent in Project and Botany Analysis Areas

There is one known occurrences of Layne's butterweed in the project area which consists of approximately 70 plants within 0.5 acre (Figure 6). The occurrence was discovered during 2016 field surveys and has not yet been entered into NRIS or CNDDB. It intersects approximately 0.5 ac of Unit SP-13. No other occurrences have been documented in the project or analysis area (California Department of Fish and Wildlife 2016; USDA Forest Service 2015b). Estimates of suitable habitat were

produced using the SSURGO soil dataset and querying for the following soil types: DUE, DUF, ISE, ISE5, ISF, RDE and RDG (USDA Forest Service 2015a).

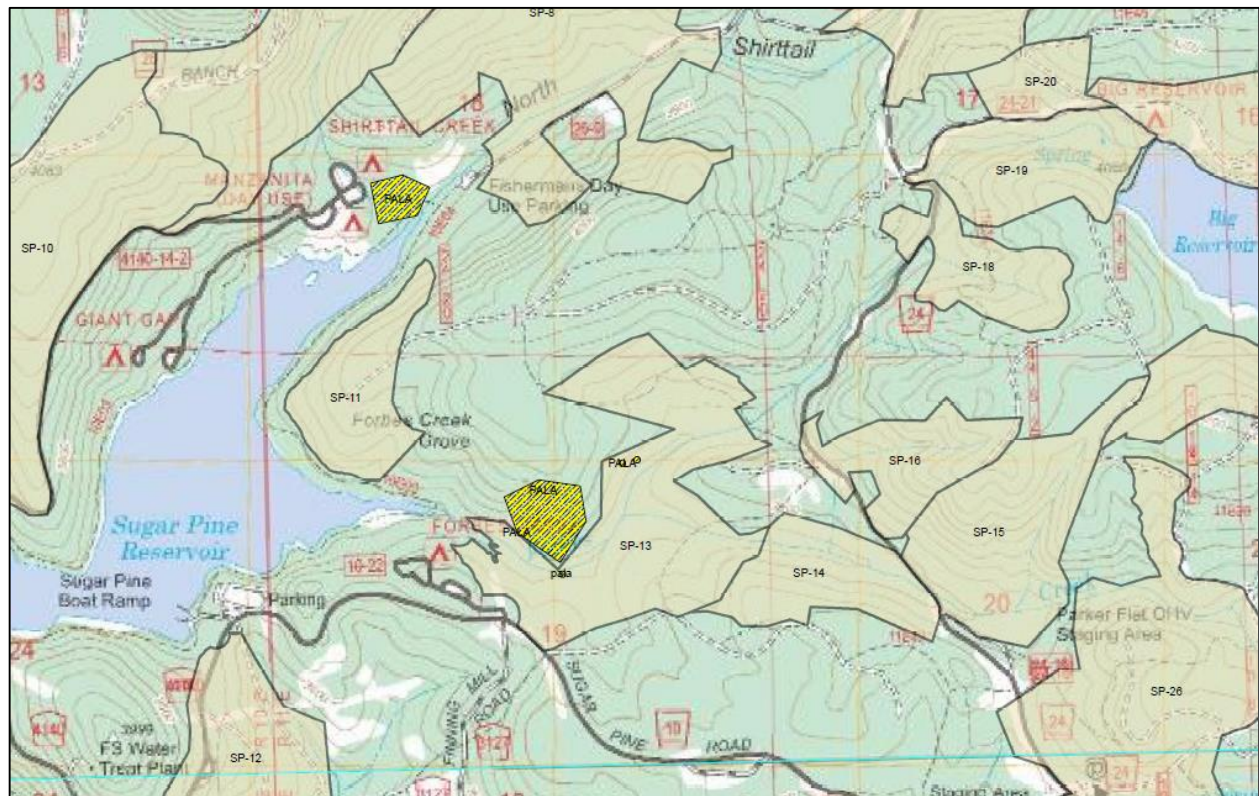


Figure 6. Layne's butterweed occurrence (PALA) discovered in June 2016

B. Effects of Proposed Action

Direct Effects

There will be no direct effects from the proposed action. While there is a portion of a known Layne's butterweed occurrence that intersects proposed commercial harvest, thinning and underburning, the included management requirements protect individual plants from direct impact. Occurrences of Layne's butterweed will be flagged and completely avoided during harvest and thinning, trees will be fell away from occurrences, fireline will be constructed at least 100 ft. from occurrences and underburning will occur when plants are dormant.

This is potential for Layne's butterweed in unsurveyed areas of the project; over 1500 ac of the project area has yet to be surveyed and a GIS review of soil types indicates that approximately 521 ac may support Layne's butterweed. However, floristic surveys are required prior to implementation (see management requirements listed in project description) and any newly discovered occurrences of Layne's butterweed will be protected in accordance with the project's management requirements.

Indirect Effects

There may be slight to moderately beneficial effects in the long-term from the proposed action. Commercial harvesting, thinning (mechanical and hand) and burning (pile, underburn) are proposed on approximately in 521 ac of potential suitable habitat and underburning alone is proposed in approximately 0.5 ac of known occurrences. Commercial harvesting and mechanical thinning will reduce canopy cover and increase tree spacing. Hand thinning—only proposed in SP-14—is expected to have a similar effect to harvesting and mechanical thinning, but to a less degree, because larger trees will not be

removed. Mastication will remove shrub cover. Pile burning and underburning will reduce fuel loads and underburning will also remove some shrub cover.

Observations suggest that disturbance—such as fire or vegetation removal—is needed for Layne’s butterweed recruitment (Baad and Hanna 1987). While the effects of vegetation management practices—such as those proposed—to Layne’s butterweed habitat are not fully known, there is a strong enough evidence of a disturbance regime for USFWS to include fire, vegetation removal, and scraping as possible recovery actions (US Fish and Wildlife Service 2002). Furthermore, studies on the Plumas NF indicate that thinning and prescribed burning benefit Layne’s butterweed by creating more open, early seral environmental conditions ((Merriam and others 2010). In particular, prescribed burning resulted in higher stem counts one year post-treatment. Based upon this information, the proposed harvesting, thinning and burn are expected to improved habitat for Layne’s butterweed.

In addition, there may be slight to moderately negative effects to suitable habitat in the short-term and long-term from ground disturbance associated with harvesting, thinning (mechanical), and associated activities (e.g. machine piling). Disturbed habitats often have a higher susceptibility to invasive plant introductions than those with long periods in late successional phases (Radosевич 2002); in particular, the use of mechanical equipment often favors invasive plant establishment (Brooks 2007; Hobbs and Huenneke 1992; Lonsdale 1999). Invasive species are considered the second leading cause of native species decline and extinction in North America, behind habitat loss (Wilcove and others 1998). Invasive plants can directly compete with TES botanical species for nutrients, light, and water or indirectly affect the species through alteration of habitat characteristics, such as nutrient cycling or fire regimes (Bossard et al 2000). A detailed assessment of the risks of invasive plant introduction and spread associated with the project can be found in the project’s Invasive Plant Risk Assessment (IPRA); overall, the project is expected to have moderate risk.

Cumulative Effects

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a catalog and analysis of all past actions would be impractical to compile and unduly costly to obtain. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. In fact, focusing on individual actions can be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions risks ignore the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. By looking at current conditions, all the residual effects of past human actions and natural events are captured, regardless of which particular action or event contributed those effects. Finally, the Council on Environmental Quality issued an interpretive memorandum on June 24, 2005 regarding analysis of past actions, which states, “agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.”

For these reasons, this analysis uses the current condition of Layne’s butterweed (i.e. abundance and distribution as well as trend and habitat condition, when known) as a proxy for the impacts of past actions. Data describing the past distribution and abundance of Layne’s butterweed is negligible for the analysis area. Prior to the discovery of an occurrence near Sugar Pine Reservoir on NFS land in 2016, there were no occurrences of Layne’s butterweed documented in the analysis area. Known areas of suitable habitat are relatively high quality, with some degradation, mostly associated with invasive species infestation or unmanaged OHV use. Nonetheless, much of the analysis area has not been

surveyed for Layne's butterweed or suitable habitat. On NFS lands, systematic surveys for rare botanical species during project planning did not begin until the early 1980s. On non-NFS lands, botanical surveys were highly uncommon prior to the passage of the California Environmental Quality Act in 1970. This prohibits any meaningful an assessment of trend for Layne's butterweed in the analysis area.

To provide a contextual framework for the scale of potential cumulative effects associated with the Sunny South project, **Error! Reference source not found.** shows the proportion of known Layne's butterweed occurrences that have the potential to be affected by the proposed action, compared to the total known occurrences managed by TNF and those known in California. The Tahoe National Forest only manages 4% (2 EO) of total known occurrences across species range (49 EO), with only one (2%) potentially affected by proposed activities or past, present and reasonable foreseeable actions in the analysis area. Similarly, while the amount of suitable habitat potentially affected by the project is moderate in scale (521 ac), in the context of the entirety of ultramafic and gabbro soils on TNF and across the species range and the limited scope of effects, this quantity is not likely significant.

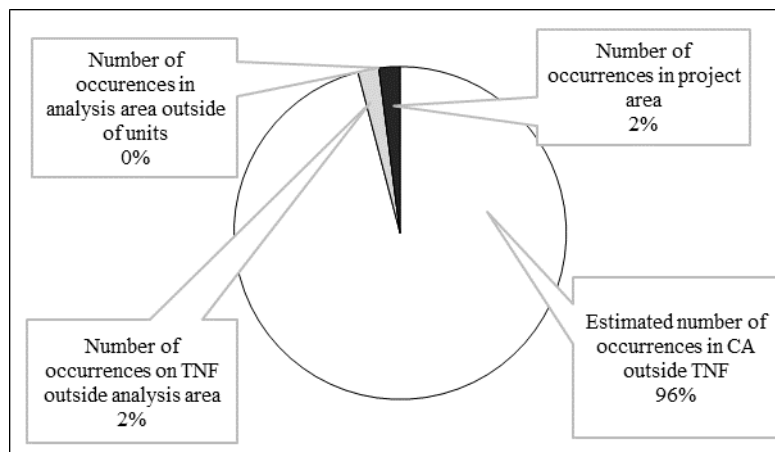


Figure 7. Portion of Layne's butterweed occurrences in project area, analysis area & on TNF

Past actions

The scope and scale of the effects of past actions on Layne's butterweed in the analysis area are largely unknown. Despite a dearth of abundance, distribution and trend information for the analysis area, it is reasonable to assume that past actions have reduced the abundance and distribution of Layne's butterweed and degraded its suitable habitat, though the scope and scale of these effects is unknown. Development (e.g. home, infrastructure construction) has likely resulted in permanent losses of individuals and suitable habitat. Past actions involving ground disturbance (e.g. gold and gravel mining, timber harvest, road construction, off-highway vehicle use, overgrazing) have likely degraded suitable habitat in a variety of habitat types. Decades of fire suppression have increased canopy cover, fuel loads and tree density in forested habitats. These past actions likely disproportionately affect species that are not disturbance tolerant. For species that occupy open habitats or are tolerant of some level of disturbance (i.e. Layne's butterweed), it is possible that past ground-disturbing actions have had a beneficial effect by creating openings and areas of suitable habitat. However, by increasing disturbance, those same actions have increased susceptibility to invasive plant invasion and increased the overall risk to native plant communities and rare species. Furthermore, disturbance-tolerant species are likely negatively impacted by alterations to fire regime (e.g. longer fire return interval, higher severity fires) wrought by decades of fire suppression.

Present and foreseeably future actions

NFS lands account for approximately 80% of the analysis area (24,950 ac). On NFS lands, as of April 2016 in the Schedule of Proposed Actions, there are approximately 24 projects in the planning stage and several ongoing actions to be considered. Most of the projects in the planning stage are small-scale special use permits authorizing activities on existing roads, trails and facilities, with no effect on Layne's butterfly individuals or suitable habitat. There are five vegetation management projects (Biggie, Cuckoo, Big Oak Flat Bug Kill, Trailer Park Bug Kill and Hazard Tree) planned for approximately 4,000 ac in the analysis area, with Biggie and Cuckoo representing over 95% of the acreage; proposed activities include tree harvest, thinning (mechanical and hand) and burning (pile and underburn). These projects include similar types of activities as those analyzed for the Sunny South Project, likely resulting in similar scope and scale of effects (i.e. no direct effects, some short-term negative indirect effects and long-term beneficial effects to habitat). The Sugar Pine Dam Radial Gates Installation would authorize installation of radial steel gates in the Sugar Pine Dam spillway, flooding 43 ac of NFS lands; no Layne's butterfly occurrences are currently known in the proposed reservoir area, but there would be permanent losses of ultramafic habitat. There are two OHV reroute projects (Big Sugar, Sugar Pine) that are expected to improve ultramafic habitat conditions by rerouting trails away from sensitive areas; the scale of reroutes is expected to be limited, but has not been finalized. The Mosquito Grazing Allotment would authorize cattle grazing in the analysis area; there are no Layne's butterfly occurrences or suitable habitat in the portion of the allotment that intersects the analysis area. In addition, the following ongoing activities occur on NFS lands in the analysis area: fuels management, mining operations, grazing, OHV use (e.g. several designated OHV routes near Sugar Pine Reservoir) and other recreational use.

On NFS lands, current projects and activities incorporate management measures to avoid or reduce negative effects to federally listed plant species (e.g. field surveys, protection of known occurrences, invasive plant management). Future projects on NFS lands will undergo site-specific analysis and be subject to the LRMP's design criteria which include managing federally listed species to ensure that Forest Service actions do not jeopardize or adversely modify critical habitat. Therefore, the contribution to cumulative effects of these projects is likely to be minimal or similar to those described in this analysis.

Non-NFS lands accounts for approximately 20% of the analysis area (6,050 ac). According to CalFire's Forest Practice Geographical Information System (CalFire 2015), there are no current Timber Harvest Plans within the analysis area. Nonetheless, there is still potential for effects on non-NFS lands in the analysis area associated with current activities such as grazing, mining, and OHV use. Current and future projects on non-NFS lands are still subject to the requirements of the California Environmental Quality Act (CEQA) and California Endangered Species Act (CESA), which require measures to avoid or mitigate impacts to state listed species. Therefore, the contribution to cumulative effects of these projects is likely to be minimal or similar to those described in this analysis.

Cumulative effects conclusion

When considered in the context of the effects of other past, present, and reasonably foreseeable future actions, the project is not expected to contribute significantly to adverse impacts on Layne's butterfly.

C. Conclusion and Determination

It is my determination that the Sunny South Project **may affect individuals but is not likely to adversely affect** Layne's butterfly. This determination is based on the following: there is one known occurrence that intersects proposed activities and areas of suitable habitat that have yet to be surveyed; the included management requirements are sufficient to protect known occurrences and suitable habitat; there may be short-term negative impacts to suitable habitat, but the proposed harvesting, thinning and underburning will likely benefit known occurrences and suitable habitat long-term.

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Layne's butterweed

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Appendix A. USFWS Species List



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office

FEDERAL BUILDING, 2800 COTTAGE WAY, ROOM W-2605

SACRAMENTO, CA 95825

PHONE: (916)414-6600 FAX: (916)414-6713



Consultation Code: 08ESMF00-2016-SLI-1744 June 28, 2016

Event Code: 08ESMF00-2016-E-03789

Project Name: Sunny South

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2)

of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

Official Species List

Provided by:

Sacramento Fish and Wildlife Office
FEDERAL BUILDING
2800 COTTAGE WAY, ROOM W-2605
SACRAMENTO, CA 95825
(916) 414-6600

Consultation Code: 08ESMF00-2016-SLI-1744

Event Code: 08ESMF00-2016-E-03789

Project Type: FORESTRY

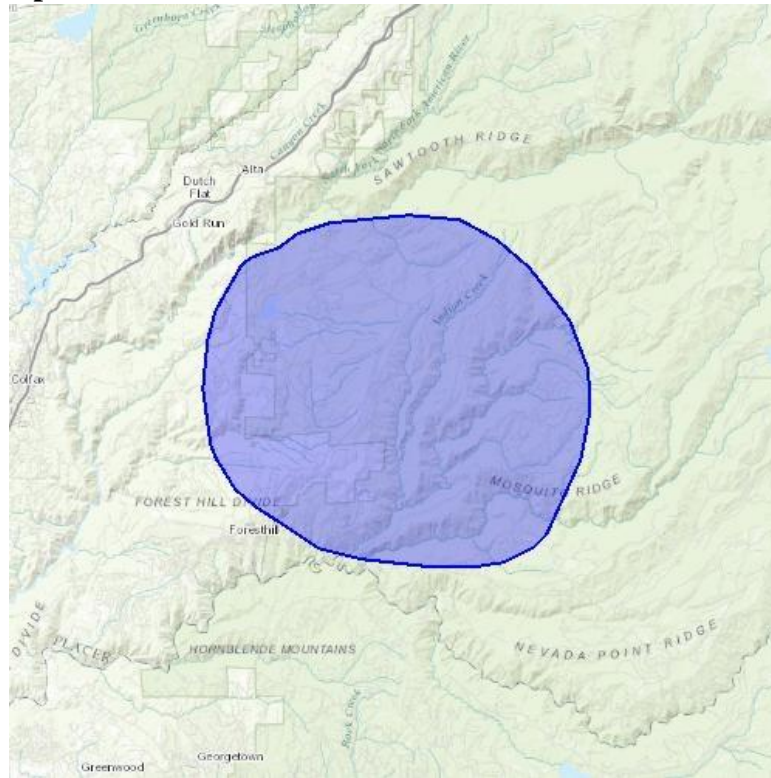
Project Name: Sunny South

Project Description: SCOPE OF AREA AFFECTED: The project is located on the American River Ranger District, Tahoe National Forest, near Sugar Pine Reservoir, Big Oak Flat, and the Foresthill Forest Genetics Center in Placer County, California (Figure 1). The total project area is approximately 2,800 acres. The elevation ranges of the Sunny South treatment units are 3,464 to 4,419 feet above mean sea level.

Initial contact with the United States Fish and Wildlife Service (USFWS) Forest and Foothills Branch Office in Sacramento, CA for this project occurred (regarding *Rana draytonii*) April 5, 2016. Consultation regarding this species, which is not known to occur in the analysis area but has suitable habitat that may be affected by the proposed action (refer to Section VI “Existing Environment, Effects of the Proposed Action, and Determinations” for the rationale that led to each determination), will be completed upon receipt of a USFWS letter of concurrence. Two site visits with USFWS personnel from the Sacramento office were conducted in 2016.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-120.66970825195312 39.17931234542311, -120.64567565917967 39.16946468278697, -120.6243896484375 39.1548237167026, 120.59864044189453 39.128994951066765, -120.58662414550783 39.10342313168426, -120.5855941772461 39.08237269503051, -120.59177398681639 39.058650119748236, -120.6130599975586 39.02105084238812, -120.62129974365233 39.015182484048744, 120.64155578613281 39.00744617666487, -120.66043853759766 39.0047782882536, -120.68790435791017 39.00451149387851, -120.73322296142577 39.00851330385611, -120.76103210449219 39.014382215631244, -120.80188751220703 39.03491957140723, -120.81493377685547 39.04398611520078, -120.82798004150389 39.059716474034666, 120.83175659179686 39.0666473843245, -120.83656311035158 39.09463067549315, 120.83312988281249 39.118341154165186, -120.82798004150389 39.13325601865834, -120.81150054931639 39.156421061078305, -120.80463409423828 39.16041426336862, -120.78678131103516 39.165471994238374, -120.77545166015625 39.17212634923011, -120.75382232666016 39.17798166079628, -120.70266723632812 39.181441388438245, -120.66970825195312 39.17931234542311)))

Project Counties: Placer, CA

Endangered Species Act Species List

There are a total of 5 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	Status	Has Critical Habitat	Condition(s)
California red-legged frog (<i>Rana draytonii</i>) Population: Entire	Threatened	Final designated	
Sierra Nevada Yellow-legged Frog (<i>Rana sierrae</i>)	Endangered	Proposed	
Fishes			
Delta smelt (<i>Hypomesus transpacificus</i>) Population: Entire	Threatened	Final designated	
steelhead (<i>Oncorhynchus</i> (=salmo) <i>mykiss</i>) Population: Northern California DPS	Threatened	Final designated	
Flowering Plants			
Layne's butterweed (<i>Senecio layneae</i>)	Threatened		

Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Amphibians	Critical Habitat Type
California red-legged frog (<i>Rana draytonii</i>) Population: Entire	Final designated

Appendix B. California Red-legged Frog Habitat Site Assessment Data Sheets

Appendix D. California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ (FWS Field Office) (date) (biologist)
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Date of Site Assessment: 06/06/2016
(mm/dd/yyyy)

Site Assessment Biologists: Teater Dan _____
(Last name) (first name) (Last name) (first name)

Site Location: Placer, Shittail Creek, 10S 093909 4336003
(County, General location name, UTM Coordinates or Lat/Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Sunny South
Brief description of proposed action:

Vegetation treatments to reduce the extent and risk of insect infestations, as well as to reduce the negative effects of those infestations on forest health and resilience, are proposed on 3,000 acres of National Forest System (NFS) lands. Proposed project treatments include: thinning of at risk stands, mastication, prescribed burning, soil decompaction and decommissioning of unauthorized roads and trails, salvage logging of insect affected dead and dying trees and reforestation.

- 1) Is this site within the current or historic range of the CRF (circle one)? ☒ YES NO
- 2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES ☒ NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION (if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND: Size: NA Maximum depth: _____
Vegetation: emergent, overhanging, dominant species: _____
Substrate: _____

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: 12.5 meters
Depth at bank full: 0.1 meters
Stream gradient: 24%

Are there pools (circle one)? ☒ YES ☐ NO

If yes,

Size of stream pools: 2-3 meter lengths 1-2 meters wide
Maximum depth of stream pools: 1 meter

Characterize non-pool habitat: run, riffle, glide, other: low gradient riffles and runs

Vegetation: emergent, overhanging, dominant species: conifer dominated
juniper cover, alder present, stream lacks emergent veg.

Substrate: 70% cobble 20% gravel 10% fines.

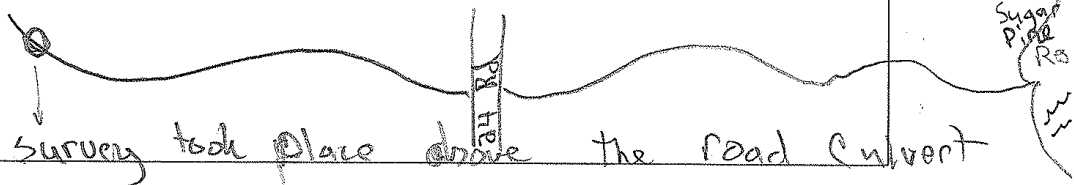
Bank description: evidence of scouring flows, some
channel incision is evident.

☒ **Perennial** or **Ephemeral** (circle one). If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

FYLF present, Salmonids present. Alluvial
system. Tributary to Sugar Pine Reservoir.

flow →

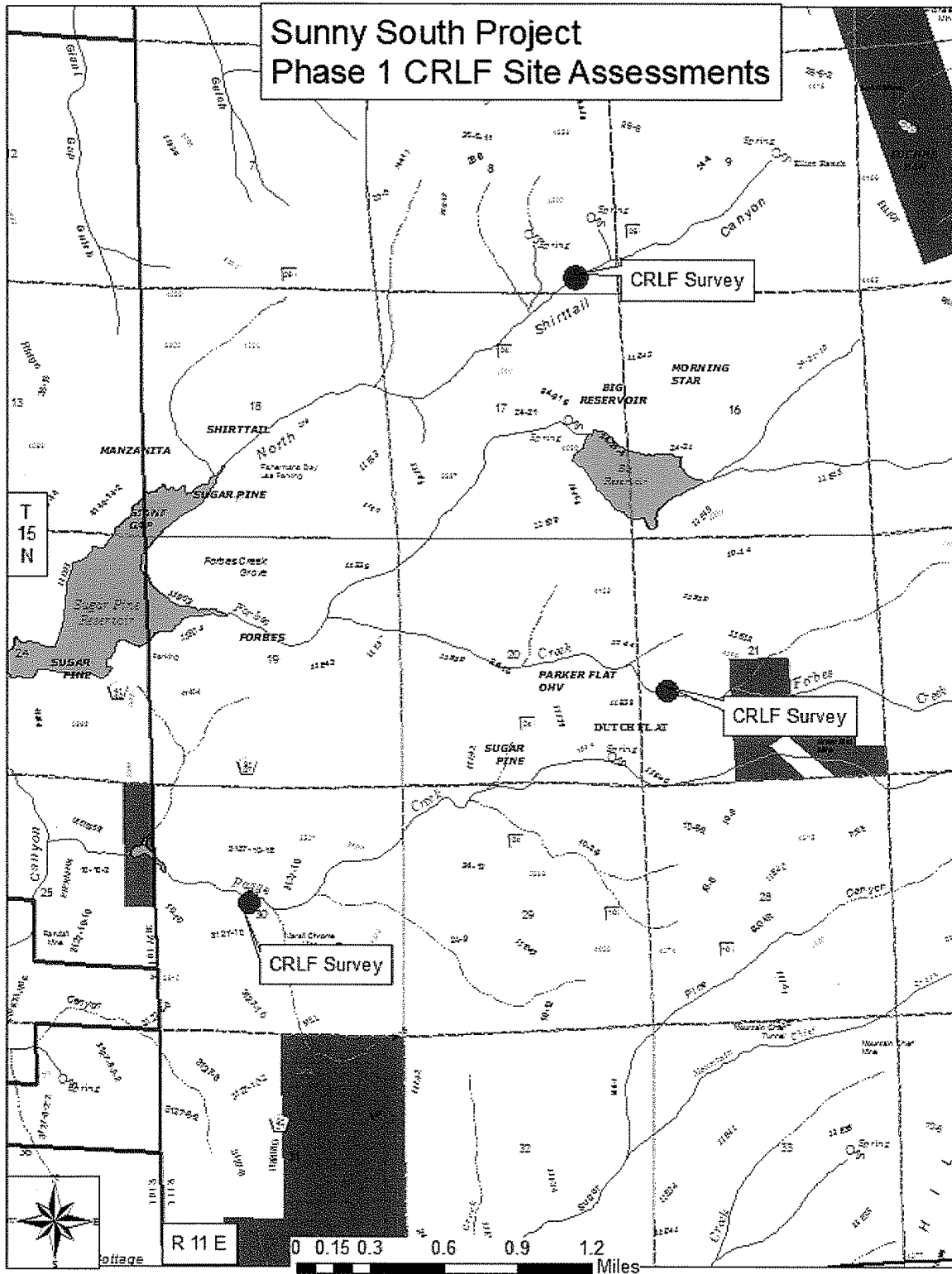


Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species location



Sunny South Project Phase 1 CRLF Site Assessments



Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 06/06/2016
(mm/dd/yyyy)

Site Assessment Biologists: Teater Dan
(Last name) (first name) (Last name) (first name)

(Last name) (first name) (Last name) (first name)

Site Location: Placer, Pagge Creek 10S 0691828 4331960
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Sunny South
 Brief description of proposed action:

Vegetation treatments to reduce the extent and risk of insect infestations, as well as to reduce the negative effects of those infestations on forest health and resilience, are proposed on 3,000 acres of National Forest System (NFS) lands. Proposed project treatments include: thinning of at risk stands, mastication, prescribed burning, soil decompaction and decommissioning of unauthorized roads and trails, salvage logging of insect affected dead and dying trees and reforestation.

- 1) Is this site within the current or historic range of the CRF (circle one)? YES NO
- 2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
 If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND: N/A

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

Substrate: _____

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: 6.3 meters
Depth at bank full: 0.25 meters
Stream gradient: 4%

Are there pools (circle one)? (YES) NO
If yes,

Size of stream pools: average 4 meters in length 2 meters wide
Maximum depth of stream pools: 0.4 meters

Characterize non-pool habitat: run, riffle, glide, other: low gradient
riffles, runs.

Vegetation: emergent, overhanging, dominant species: stream is lacking
in emergent vegetation.

Substrate: cobble dominated, some gravel. The
downstream section of page brook is dominated
Bank description: serpentine outcrops, stable banks by bedrock

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: Perennial

Other aquatic habitat characteristics, species observations, drawings, or comments:

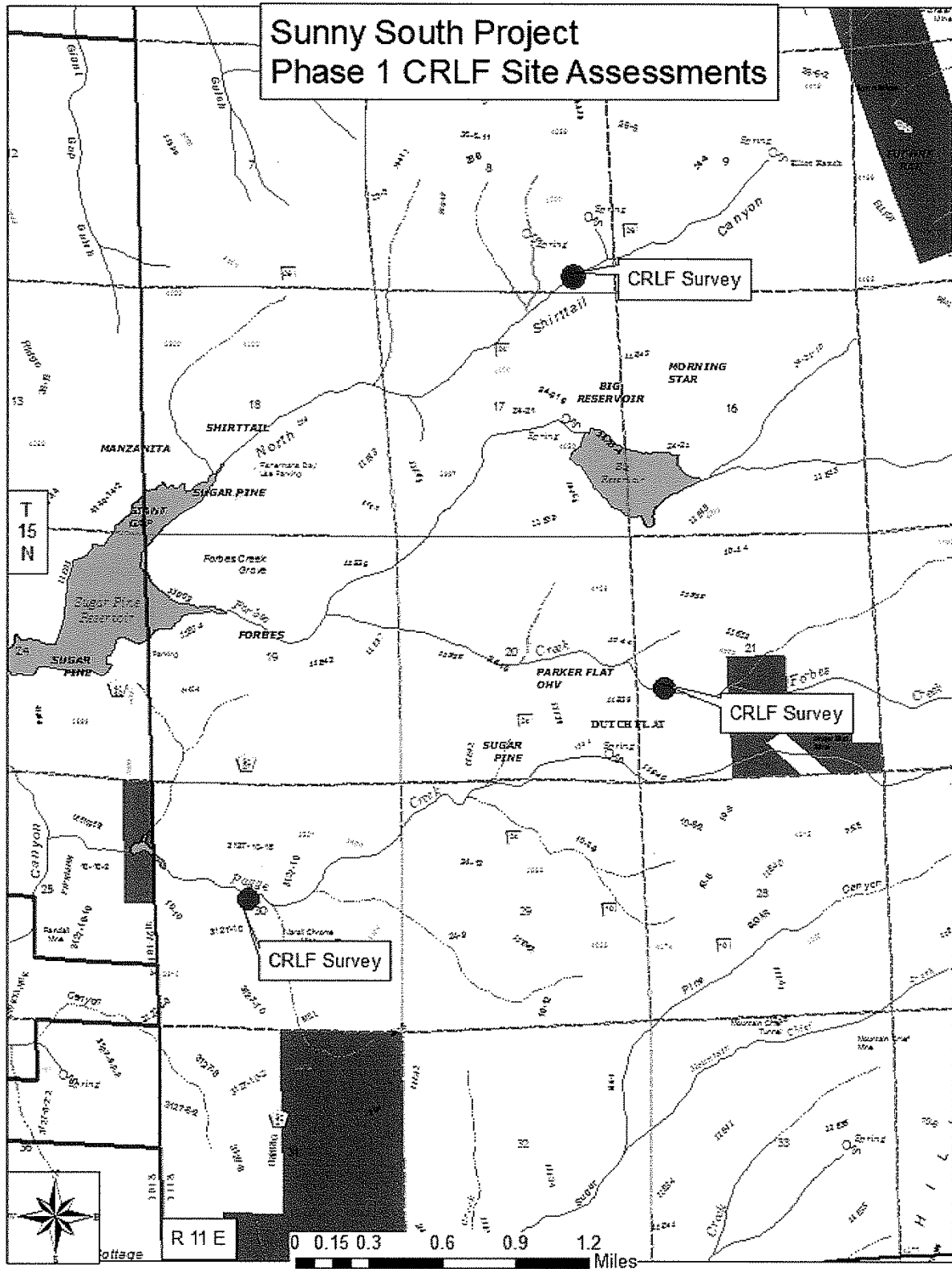
This site contains a high level of sedimentation due to a low water crossing upstream. The high amount of sedimentation is likely having an adverse impact on benthic macroinvertebrates.

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species location



Sunny South Project Phase 1 CRLF Site Assessments



**Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet**

Site Assessment reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 05/26/2016
(mm/dd/yyyy)

Site Assessment Biologists: Teater Dan _____
(Last name) (first name) (Last name) (first name)

(Last name) (first name) (Last name) (first name)

Site Location: Placer, Forbes Creek, 10S 0694283 4333463
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

10S 069 4430 4333364

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Sunny South
Brief description of proposed action:

Vegetation treatments to reduce the extent and risk of insect infestations, as well as to reduce the negative effects of those infestations on forest health and resilience, are proposed on 3,000 acres of National Forest System (NFS) lands. Proposed project treatments include: thinning of at risk stands, mastication, prescribed burning, soil decompaction and decommissioning of unauthorized roads and trails, salvage logging of insect affected dead and dying trees and reforestation.

1) Is this site within the current or historic range of the CRF (circle one)? YES NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND: N/A

Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____

Substrate: _____

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: 23' 7m.
 Depth at bank full: 0.4 feet
 Stream gradient: <4%

Are there pools (circle one)? ☒ YES ☐ NO

If yes,

Size of stream pools: relatively small, lacks emergent veg.
 Maximum depth of stream pools: <2'

Characterize non-pool habitat: run, riffle, glide, other: dominated by
low gradient riffles and runs

Vegetation: emergent, overhanging, dominant species: Alder, willows, etc
Overhanging: cedar, Ponderosa Pine.

Substrate: cobble (60%) boulder (30%) gravel (10%)

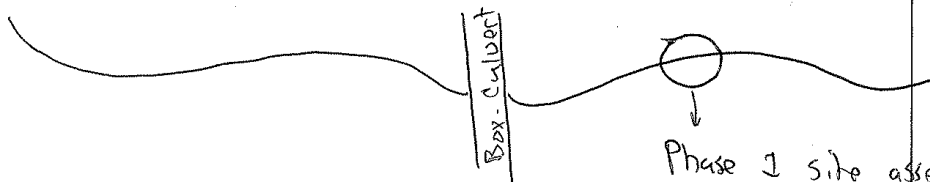
Bank description: evidence of scouring downstream of
the culvert. Stable banks upstream. Cobble and
riparian veg are stabilizing

☒ **Perennial** or **Ephemeral** (circle one). If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

foothill yellow-legged frogs present. Pacific tree frogs,

← flow ←



Necessary Attachments:

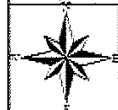
1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species location



**Sunny South Project
Phase 1 CRLF Site Assessments**

The map displays the project area with the following features:

- CRLF Survey Sites:** Three sites are marked with black dots and labeled "CRLF Survey". One is located near the Sugar Pine Reservoir, another near the Parker Flat OHV, and a third near the Dutch Flat area.
- Geographic Features:** The map shows the Sugar Pine Reservoir, the Parker Flat OHV, and the Dutch Flat area. It also includes the locations of the CRLF Survey sites.
- Scale and Orientation:** A scale bar at the bottom indicates distances from 0 to 1.2 miles. A north arrow is located in the bottom left corner.
- Grid and Coordinates:** The map is overlaid with a grid showing Township 15 North and Range 11 East.



Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____

(FWS Field Office)

(date)

(biologist)

Date of Site Assessment: 07/08/2015

(mm/dd/yyyy)

Site Assessment Biologists:

Stitt
(Last name)

Eric
(first name)

(Last name)

(first name)

(Last name)

(first name)

(Last name)

(first name)

Site Location: Sugar Pine Reservoir, Placer Co. Forest Hill
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Forest Hill PUD - Sugar Pine

Brief description of proposed action:

Install Radial bakers @ Dam - Raise o HWm 1/2 20 ft
above present level.

1) Is this site within the current or historic range of the CRF (circle one)? YES NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: 165 acres

Maximum depth: UK

Vegetation: emergent, overhanging, dominant species: No emergent or

overhanging vegetation

Substrate: 99% Soil

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: _____

Depth at bank full: _____

Stream gradient: _____

Are there pools (circle one)? YES NO

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____

Vegetation: emergent, overhanging, dominant species: _____

Substrate: _____

Bank description: _____

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

Large ponded reservoir with variable hydroperiod -
Water being released @ present - obvious draw-
down and large exposed banks -
See attached report and photos
Bullfrogs and crayfish observed in places.

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs
3. Maps with important habitat features and species location